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A CANCER PROGRAM FOR CALIFORNIA*

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THE subject of cancer therapy is chosen for presentation at this time because of the increasing importance which malignant disease has acquired in the relations of the medical profession with the public. Public interest is focused upon this problem, and during the past year it has been a subject of quite constant discussion among medical men. The treatment of cancer is especially important to the California medical profession because of the rapidly increasing mortality rate from that disease in this state. The death rate from cancer in California has increased 50 per cent since 1918, and it has doubled since 1906. This is especially interesting in view of the rapid decrease in the California mortality rate of tuberculosis which has fallen in almost the same proportion in which the mortality rate of cancer has risen. The death rate from cancer in California is almost 30 per cent higher than the average death rate in the United States, and it is 80 per cent higher than that of Canada. The high and increasing cancer death rate in California is due largely to the influx of patients with chronic diseases or of advanced age. It is also due to more accurate diagnosis. However, the fact remains that we are dealing with a steadily increasing number of cancer patients in our State.

THE RESPONSIBILITY OF THE MEDICAL PROFESSION

The responsibility of the medical profession in this problem is also greatly increased by the unprecedented publicity that has recently been given to cancer. The public has become cancer-conscious. It realizes the dangers lurking in cancer and is seeking help earlier than ever before. This change in the attitude of the public makes it incumbent upon us to provide adequate means of diagnosis and treatment of cancer to meet this increased responsibility.

The cure of cancer depends upon early diagnosis and immediate treatment. Early localized, accessible cancer is curable. The percentage of five-year cures in those patients in whom the stage of glandular involvement or metastasis has not been reached varies from 50 to 90 per cent, depending upon the region involved. These are proven, possible results, as shown in the work of experienced men in the largest and most adequately equipped institutions, but they are results obtained only in the early localized stage of the disease.

A survey of cancer patients seeking aid shows that only a very small percentage comes in the early stage of the disease when cure may be possible. At least 25 per cent of the patients who have carcinoma of the breast are inoperable and 60 per cent of the patients with cancer of the uterus, stomach, thyroid, and rectum are in too advanced a stage to anticipate a cure. This percentage reaches 85 per cent in the cases of cancer of the paranasal sinuses. It has been estimated that in the large New York hospitals at least 75 per cent of the cancer patients are first seen in an advanced stage.

When we summarize the actual results of our present treatment of cancer, even with modern methods used in the most skilled manner, the five-year cures among the treated patients make up only 25 per cent of the total number. This obtains in the operated patients who have carcinoma of the breast and stomach, in radiated patients with carcinoma of the cervix, and in patients with intra-oral cancer in which a combination of the two methods is used. When we consider these results of treatment in comparison with the high percentage of patients having advanced inoperable carcinoma, we find that less than 10 per cent of the patients presenting themselves for treatment to our best equipped hospitals have a life probability beyond the five-year period.

The public, however, does not judge the success of the treatment of cancer by these results from the few great clinics of the world. Its opinion is formed from the failures it observes in the local communities. Most cancer is treated by surgeons whose experience is limited to a very few patients a year. The consequent operative mortality is high and the actual cure of cancer is thus not comparable to the better results which we have described. It is no wonder that the public looks upon cancer as a hopelessly incurable disease and dreads any operative attack.

We must face the fact that, although early accessible cancer is curable, only from five to ten per cent of our cancer patients are salvaged for five extra years of life and that the mortality from cancer is steadily increasing. The obvious answer is that the cancer patient must be reached by adequate, early treatment in skilled and experienced hands. How to accomplish this is one of the outstanding problems before the medical profession.

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PREVENTION OF CANCER

It is not an impractical or Utopian idea to believe that a large number of the cases of cancer can be prevented. Cancer of the skin almost invariably arises in lesions which can be readily removed. The same is true of cancer of the lip, tongue, and the anterior intra-oral region. The lump or ulcer that does not heal immediately is recognized by the patient in its early stages while it is still resectable.

Cancer of the cervix, which represents one-quarter of all the cases of cancer in women, is almost wholly preventable. The preëxisting laceration, erosion, or infection can be promptly eliminated by repair, amputation or cautery, and cancer of the cervix practically never occurs in those patients in whom these lesions have been successfully treated. Such a program involves meticulous repair after delivery and also involves periodic examinations, but the reward of preventing one-fourth of the cases of cancer in women is worth the cost of any amount of education required for its attainment on the part of both the public and the medical profession. This alone is a worthy objective for the medical profession in facing the cancer problem.

The less frequent cancer of the gall-bladder and thyroid is equally preventable. Ninety-four per cent of the cases of carcinoma of the gall-bladder are associated with gall-stones, and 92 per cent of the patients give a long history of gall-bladder symptoms or of repeated attacks of gall-bladder colic. Carcinoma of the thyroid gland develops in preëxisting adenomata which are readily recognized and easily removed in from 80 to 90 per cent of the patients.

The greatest service rendered mankind by the medical profession in the past fifty years has been the prevention of infectious diseases. An equal service is possible in the prevention of cancer, but it cannot be accomplished by the wholesale methods that obtained with yellow fever, typhoid fever, or diphtheria. The prevention of cancer requires the active interest of the individual patient and the alert attention of the individual physician. Given both, there would be a prompt reduction in the incidence and mortality rate of cancer.

EARLY DIAGNOSIS

We have attributed the mortality of cancer largely to the fact that patients do not seek medical advice immediately. This factor is losing its importance through the efforts of the American Society for the Control of Cancer and other widespread publicity. The public is being educated to the significance of the lump, the ulcer and the atypical bleeding, and as we continue this education the public will expect and demand early diagnosis followed by immediate adequate treatment. The responsibility for cancer mortality is coming to rest largely upon the medical profession—upon its ability to recognize early cancer and to treat it immediately and adequately. We must justify our propaganda for periodic examination and early advice.

Early cancer is one of the most difficult lesions to diagnose. The first symptoms are trivial and by the time the diagnosis is obvious the cancer is usually no longer early or curable. There is no excuse for treating lesions of the lip or oral cavity with silver, cautery, or radiation without diagnosing the lesion, and diagnosis most frequently demands excision of the lesion and microscopic examination. A few days of nonirritating asepsis are justifiable while searching for and removing possible etiological factors, but beyond that a diagnosis as to whether the lesion is benign or malignant is imperative in every case if we expect to lower cancer mortality. Lesions of the rectum carry a similar responsibility. Ninety per cent of the cancer in this region lies within reach of the examining finger, and all cases admit of easy biopsy through the proctoscope, yet nearly 60 per cent of these cases escape early recognition because of failure to make the examination or because symptoms are attributed to an innocent hemorrhoid or fissure.

Fortunately, patients with carcinoma of the breast are reporting for examination earlier than in the past. The early diagnosis, in the majority of patients, can be based on a lump which is fixed in the surrounding breast tissue; but there are still 25 per cent of the patients who do not permit a preoperative diagnosis. The only safe opinion must rest upon a microscopic diagnosis of a frozen section of the excised lump, and the surgeon must be prepared for immediate radical surgery if the diagnosis is one of malignancy. To wait for dimpling of the skin, retraction of the nipple, or involvement of the axillary glands is to throw away deliberately the possibility of a cure.

TREATMENT OF EARLY CANCER

Not only is the early recognition of malignancy essential. Adequate treatment must be immediate. The period of time during which cancer is in a curable stage is short. In many types of lesions it consists of only a few weeks; in the majority of cases, of not more than six months. To wait for classical symptoms or to temporize with expectant treatment is to squander the patient's chance to live.

We must remember that the first method of attack usually determines the final results. If a mouth lesion is treated by superficial cautery or "a little radium," if a suspicious lesion of the cervix is subjected to tampons, if a breast tumor is treated with hot compresses or massage, or if a carcinoma of the stomach is treated as an ulcer, the patient is robbed of the curable stage of his disease. After such a primary attack and delay the mistake will not be remedied by referring the patient to the most skillful surgeon or by taking him to the great cancer hospital. They cannot return the patient to the stage of curability. Time, and usually a very short time, determines whether or not the patient can be cured by any known method or by any operator. The fate of the patient lies with the physician who first sees him.

The adequate treatment of early cancer is radical removal of the growth. With few exceptions

this means radical surgery. Early skin cancer can be successfully treated by the x-ray or radium, and cancer of the cervix responds to proper radiation with a higher percentage of cures than can be obtained by other methods. However, even in these patients good surgery is better than indifferent or insufficient radiation. Proper radiation demands skill and experience equal to that of good surgery. In cases of cancer of the mouth the addition of radiation to surgery will materially increase the number of cures. In cases of seminoma of the testicle and of papillary carcinoma of the ovary it is essential that surgery be followed by x-ray therapy. But early cancer is primarily a surgical problem. There is no easy method of cure! No drug or hypodermic medication will prevent the growth of cancer! The use of any other therapy in order to avoid surgery or to delay surgical removal results in inexcusable waste of human life.

It is in the case of early cancer that the physician faces his greatest responsibility. The patient with the advanced carcinoma he can comfort, but seldom cure. The early case is curable, and he can prevent the disease from becoming advanced and incurable. The general practitioner usually sees the patient first, and the control of cancer rests largely upon him. He sees many cancer patients early, and as popular education progresses the general practitioner will see a much larger percentage of such, and while the patients are still in the curable stage. The future mortality rate of cancer will depend first upon the promptness of the general practitioner's recognition of the disease and his demand for immediate treatment, and secondly, upon the skill and experience of the surgeon and radiologist who see the patient in consultation with him.

PALLIATIVE TREATMENT

It is estimated that there are fifteen thousand patients in California who have cancer advanced beyond the probability of cure. This group of patients presents a much more complex and difficult problem than does the early, curable group, and the two distinct indications for treatment are prolongation of life and, what is more important, freedom from suffering during the years or months ahead. There is a tendency on the part of both the patient and his physician to demand radical treatment after the primary delay when it is too late. We err as much in attempting to do the impossible with surgery and radiation in late cancer as in temporizing without them in early cancer. In the treatment of these late patients we must determine clearly what constitutes surgical operability, and we must limit our attack with radiation to palliation, taking care not to increase rather than decrease later symptoms. There comes a time when radical surgery and destructive radiation are no longer indicated; when, on the contrary, they will shorten life and cause increased suffering.

When used with proper restraint and appreciation of its limitations, the palliative treatment of cancer prevents untold suffering and occasionally prolongs life. In cases of cancer of the gastro-intestinal tract, palliation must depend upon surgery alone; side-tracking operations when the growth is not resectable will remove obstructive symptoms and keep the patient comfortable. Radiation has little favorable effect upon these patients. In cases of carcinoma of the rectum, a colostomy followed by the implantation of radium into the growth, together with external radiation, gives a large number of favorable symptomatic results. Carcinoma of the bladder frequently becomes symptomless with the use of x-ray therapy or the implantation of radium, if the growth is not too extensive. Carcinoma of the thyroid is well controlled by radiation with or without surgery, and such cases frequently do well until overcome by distant metastasis.

Carcinoma of the breast usually requires both surgery and radiation for its best palliative treatment. In cases in which the extension is limited to the axillary glands, radical excision, followed by postoperative x-ray therapy, gives the best final results. In cases in which the extension has reached the supraclavicular glands or more distant regions, radical excision is contraindicated; but radiation, with or without amputation of the breast, will add greatly to the comfort if not to the prolongation of life of the patient. Recurrences following surgery for carcinoma of the breast are inoperable unless distinctly localized and freely movable. But recurrences and bone metastases frequently yield to radiation.

Carcinoma of the cervix, unless far advanced, usually admits of local healing and months of freedom from symptoms, through the use of radium and x-ray therapy. Even in the frozen pelvis, radium will frequently stop the bleeding if judiciously applied. The palliation thus secured in these types of carcinoma patients is invaluable even though life is not prolonged.

LIMITATIONS IN DIAGNOSIS AND THERAPY

While emphasizing the importance of early diagnosis we must recognize the fact that in a large percentage of patients abdominal cancer does not lend itself to early recognition because of the lack of serious or characteristic symptoms in the early course of the disease. Our California statistics show that over 50 per cent of cancers in the male are found in the gastro-intestinal tract, mesentery, liver, or pancreas, and that over 35 per cent of cancers in women occur in the same organs. It is not probable that these patients will learn to seek advice earlier than they do now. The accuracy of diagnosis in those patients who do seek advice may be materially increased by the search for cancer in all patients past the third decade. However, we may not expect a great decrease in the total cancer mortality in this group with our present methods of diagnosis and treatment.

We must also recognize the fact that there is a large field of cancer in which our present methods of treatment are futile. Cancer of the lungs, liver, and pancreas are beyond our present reach; cancer of the esophagus has involved the

entire thickness of the esophageal wall by the time it is discovered; extensions into pelvic and retroperitoneal glands or into retroperitoneal tissues cannot be reached; the late sloughing infected cancer in any location offers very little hope even for palliation.

EDUCATION OF THE PROFESSION

This sketchy survey of the possible cure and palliation of cancer serves to point out the responsibility which rests with the medical profession. The first burden of that responsibility rests on the education of the family physician. He must be taught to protect his patients from cancer by the treatment of precancerous lesions. He must be taught to recognize the importance of suspicious lesions and suspicious symptoms. He must be led to realize the imperative need for immediate, accurate diagnosis and prompt treatment. The cure of cancer lies in the eradication of the suspicious lesion, the early lesion before it becomes typical or obvious.

NEEDS OF CALIFORNIA IN EARLY TREATMENT

The second responsibility is the provision of means of accurate diagnosis and proper treatment that shall be accessible to the family physicians of California. The diagnosis and treatment of cancer is far too complex a problem to be considered the function of the individual physician or of any one specialist. Diagnosis involves a large field of technical procedures, and the program of therapy requires the combined judgment of the internist, the surgeon, the pathologist, and radiologist. A pathologic diagnosis of carcinoma or sarcoma is no longer adequate. The pathologist must consider also the type of cell development, the age of the patient, the reaction of the host, the rapidity of growth, and the probable radiosensitivity of the part involved. Knowledge of all of these conditions is essential to intelligent therapy. Likewise, the choice and method of treatment requires wide skill and experience in both surgery and radiation. Thus the proper handling of cancer is not an individual problem for the individual physician; it is a study problem for a group of physicians.

The medical profession in France has shown the best judgment in connection with this problem. Cancer hospitals of from fifty to one hundred beds, supported partially by the government and partially by private funds, have been scattered in the university towns throughout France. Preparation was made for the early diagnosis and proper treatment of cancer before starting any campaign of popular education, so that the French profession was then able to justify its propaganda for early examination.

A large number of special cancer hospitals in California is neither desirable nor practical at this time. But the question of organization of cancer groups in at least one hospital in every large city demands our immediate attention and is a possibility which can be promptly realized. Without great expense, members of the various specialties having definite interest and experience in cancer may be organized for group work, which will greatly increase accuracy in diagnosis and efficiency in treatment. The establishment of such a group in a general hospital will make available the consultation required by the family physician and will hasten his education in the recognition of early or suspicious cancer. Such a cancer group is an immediate possibility in every large city. The Society for the Control of Cancer or the Committee on Malignant Disease of the American College of Surgeons will conduct a survey of the local situation whenever requested by your County Medical Society, and will assist in determining the proper program and will direct in its organization.

The next immediate step in California in furnishing accurate diagnosis and treatment should be the establishment of a large cancer institute in each of our metropolitan cities. The city and county of San Francisco is preparing to build such an institute in the near future. Every possible effort should be made by the profession to obtain a similar cancer institute in Los Angeles. These two institutes, with the coöperation of the adjacent medical schools, should contact and correlate the work of all the cancer groups in the surrounding cities. The facilities of each institute should be open to the outlying groups to assist in pathologic and clinical diagnosis, to standardize radiologic equipment and to furnish radium emanation at cost. In these institutes there would be opportunity for the observation and experience necessary for training the members of the local cancer groups. With two such cancer institutes coöperating with cancer groups in the general hospitals in each county, the profession could bring to the people of California the early care which is the major problem in cancer therapy.

CANCER RESEARCH

The final responsibility of the profession lies in the field of research. When we consider that to 75 per cent of our present cancer patients, we can offer palliation only, and that to a considerable number we can offer nothing, either in the way of cure or palliation, we realize that research is of paramount importance. The medical profession should encourage and support all lines of scientific research that point to the control of cancer. Little can be expected from new or more radical methods in surgery, although there is a large field for more experience and better surgery. There have been tremendous advances in radiation therapy in the past fifteen years, and these will doubtless continue; but the decrease in cancer mortality and added palliation from radiology must come as a result of its early application and not from new methods of treatment or technique.

Proper research in the field of cancer in California demands the organization of these two large cancer institutes which would have the cooperation of our four medical schools. Our future research in cancer should be conducted under the guidance and with the assistance of these two institutes, which will have at their com-

mand a large concentration of all types of patients, as well as the clinical, pathological, and biochemical departments of the medical schools. This will assure correlation of research with all existing methods of treatnent, and will give opportunity for proper evaluation of results and determination of patients for whom new methods are indicated.

The present trend of cancer research is toward the field of biochemistry. The work with heavy metals at the tumor clinic of the Jefferson Hospital illustrates the efforts in this direction. Another valuable research is that at the Lankenau Hospital on the relation of the sulphydryl radical to cell division. Experimental work on growth restraint and palliation from various endocrine extracts is being pursued both in this country and in Italy. All of these methods should receive a final determination of their value, but they must be considered in the early experimental stage at the present time.

CANCER A PUBLIC HEALTH PROBLEM

There are medical economic considerations which make it important for the profession in California to give serious thought to cancer therapy. Cancer is rapidly coming to be considered a public health problem. Because of the large mortality, which is rapidly increasing in spite of our popular education and improved methods of therapy, many public health authorities consider that the cancer problem is one which should be subject to state control. In 1929 the legislature of Massachusetts directed the State Board of Health to establish cancer clinics throughout the state, and to establish a cancer hospital which should be open to the entire population. This action was taken with little regard to the will or desire of the medical profession. Fortunately the program was developed with the advice and help of the leaders in medicine in Massachusetts, and the clinics were located only with the consent and active coöperation of the county medical society in each locality. The program has proven of immeasurable value to the medical profession as well as to the public. Nevertheless this is state medicine. However, other states will follow this lead. Such a program of state development and state control will undoubtedly be proposed in California. It behooves the California Medical Association and the county medical societies to anticipate such action with serious, active consideration. We should plan well our cancer program so that we may lead and direct legislation in this work as we hope to do along other medical economic lines.

SUMMARY

Summing up this presentation, may I not say that cancer therapy is a challenge to the medical profession in California.

The responsibility of future cancer mortality statistics rests primarily upon the education of the general practitioner and the family physician. With him lies the possibility of the prevention of a large percentage of cases of cancer, and it is he who must detect the suspicious lesion or symptom of early cancer while it is still curable.

We must make early diagnosis and adequate treatment accessible throughout the state. To accomplish this, the California profession should solidly support the program of the American College of Surgeons as outlined by its Committee on Malignant Disease.

We should immediately provide at least two large cancer institutes, equipped for treatment, research, and education of the profession. These two institutes should have the active assistance of the related departments in our four medical schools and should coöperate with the cancer groups in every large center of the state.

We should be prepared to advise and direct legislation and public health activity in the prevention and treatment of cancer, so that they may serve the best interests of the public as well as the medical profession.

Let us tell the public the truth about cancer—that the only hope of cure lies in the early recognition and immediate destruction of the growth. This will continue to be the truth whatever the outcome of our future research.

Let us recognize the fact that cancer diagnosis and cancer treatment are group problems and are no longer the function of the individual physician, or of any one specialty.

Let us organize cancer groups throughout California that we may bring to the public early, accurate diagnosis and efficient treatment.

While we strive for palliation in the thousands of patients who have advanced cancer, let us place equal emphasis upon the education of the medical profession concerning early diagnosis and treatment and upon scientific cancer research. Then the mortality rate of cancer in California will cease to increase and will begin to decrease even as the mortality rate has decreased in tuberculosis.

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SUSCEPTIBILITY TO TUMORS—SOME OF THE FACTORS GOVERNING THE SAME*

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DISCUSSION *by Howard A. Ball, M.D., Los Angeles; H. J. Ullmann, M.D., Santa Barbara; W. T. Cummins, M.D., San Francisco.*

IT is well known to those working with experimental tumors that certain factors govern transplantation or inoculation from one animal to another. I say transplantation *or* inoculation, because tumors may in general be divided into transplantable and inoculable tumors. The first require living cells for successful transmission to host animals; the second may be transmitted by the filtered juice or extract, or by the dried, presumably dead, tissue. There are certain laws, however, which govern both types in much the

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same degree. It is the purpose of this paper to point out these factors, to draw an analogy between the behavior of experimental tumors and human tumors, and to show how some of the factors may be altered by experimental methods.

ADAPTATION OF TUMORS TO ANIMALS AND OF ANIMALS TO TUMORS

There is considerable evidence that there is a racial, probably hereditary factor in the susceptibility of animals to specific tumors. This applies particularly to genera and species, but may apply to strains or varieties within species. When the Rous fibrosarcoma was first found in a Barred Plymouth Rock chicken, it could be transmitted only to Barred Plymouth Rocks. Later it was found to "take" in a certain proportion of Rhode Island Reds, and still later in white Leghorns. When first inoculated into a strange variety the "takes" may be small in number. Later, by successive inoculations through the same strain the percentage of successful transplants approaches a hundred. Furthermore, this tumor has now passed through so many generations that inoculation into an entirely new strain of chickens is usually successful. This seems to be an adaptation of the cells of the tumor, or the virus, or both, to a variety of strains of animals within the same species.

That also corollary adaptation can be produced seems to be well established. By breeding animals which are only moderately susceptible, proportionately, to tumors, a strain may be produced in which practically every individual is susceptible to tumor; or an immune strain may be produced. The Slye strain of mice, and the Buffalo strain are well known examples. It seems, therefore, that not only cells may undergo an adaptive change by biological evolution, but that animals may be made to adapt themselves, or to inherit a susceptibility to the transplantation of certain cells of a related animal.

By other more artificial means animals and cells have been made to adapt themselves to one another. Sticker [1] was able to transmit a dog tumor to a fox. Fujinami and Hatano [2] have successfully transmitted a chicken tumor to ducks. Murphy [3] transmitted a sarcoma of mice to rats by x-raying the spleen of the host animals, but when the spleen regenerated, the inoculated tumors regressed. It is likely that the removal of the ovaries or testes of animals may influence the transmission of tumors to unrelated animals. Once this mutual adaptation is accomplished each succeeding generation of the tumor shows an increasing proportion of takes until a maximum percentage; usually between 85 and 100, is reached. That this adaptation, both as to tumors and as to animals, is in the nature of an inheritable character there can be no doubt.

TRANSPLANTATION OF NORMAL TISSUES AND TUMOR GROWTHS

Artificial tumors may be produced in animals. By "artificial tumors" I mean masses of growing tissue which feed upon the host but are not actually a part of the host's anatomy, and which may be the result of experimental transplantation. Some of the laws which govern the transplantation of adult normal tissues to normal animals are known. Transplantation from one species to another is practically impossible; from one animal to another of the same species rather difficult; from an animal to another portion of the same animal less difficult. Here, too, the type of tissue makes a difference, as only tissue which ordinarily has a great ability to regenerate when partly destroyed can be successfully transplanted—thyroid, for instance, as opposed to striped muscle which regenerates practically not at all.

Embryonic tissues may be more readily transplanted than adult. Carrell [4] produced tumors in chickens by transplanting chick embryos to adults along with a weak solution of arsenic trioxid. White [5] repeated this, and transmitted the tumors for several generations. Such tumors are teratomas at first. However, the most viable tissue only, mesenchymal connective tissue, continues to grow, and a tumor resembling an embryonal fibrosarcoma results. Here again, as in the case of spontaneous transmissible tumors, species specificity, both as to tumors and cells, persists. Heterologous transplantations of such tumors have not been reported.

The age factor in transmissible tumors is less a definitive property than race. But the age of animals undoubtedly affects their susceptibility to certain tumors. The Murray-Begg endothelioma with which I worked would take in 100 per cent of young Rhode Island Red chicks. As the animals reached maturity the proportion fell off until an age was reached when only about 10 per cent of the chickens were susceptible. It is common practice in laboratories where, particularly, chicken sarcomas are being studied to discard chickens when they reach five to six months of age, as then takes are not regular nor constant. This age corresponds with the period of sexual maturity in most chickens. On the other hand, spontaneous or transmissible *carcinomas* usually occur in older animals. For instance, the Buffalo strain of mice develop tumors on an average at eighteen months of age; the youngest to acquire a tumor was five months old. These tumors, therefore, follow the natural laws which control, more or less, the growth of human tumors and, to a considerable extent, normal tissues.

SIMILARITY OF HUMAN TUMORS TO THOSE OF LOWER ANIMALS

Factors entering into tumor susceptibility in man are less well defined, because of lack of complete knowledge of genealogy. There is, therefore, more dispute concerning hereditary susceptibility or immunity of man to tumors than of animals. But considerable evidence has accumulated to show that, at least in some lines of descent, tumor susceptibility may be inherited. Warthin's [6] cancer families are striking examples. In these a large proportion of several generations contracted carcinomas. The finding of papillo-

mata of the colon in successive generations of a family has been described by Dukes.[7] It is common knowledge that angiomas of the skin may be "inherited," and that pigmented moles run in families. Sometimes these tumors occur in exactly the same parts of the body through several generations.

That there is a racial tendency to some forms of tumors there appears to be no doubt. Naevi are more common in darker individuals. Strangely enough these tumors rarely become malignant in the more pigmented strains. Melanotic sarcomas and carcinomas are much more common in the light-skinned. This is analogous, again, to lower animal tumors. Black horses rarely, if ever, develop melanomas; light or gray horses are much more susceptible. The overproduction of fibrous tissue in the negro is an illustration of the tendency in this race to fibrous tissue tumors. The production of large keloids following injury, sometimes used as facial or body ornamentation, is common to the negro, and seldom occurs in the whites. Fibrosarcomas of low malignancy occur in the extremities of negroes much more commonly than in others. The frequency of fibromyomas in this race is likewise common knowledge. On the other hand, epidermoid carcinomas, of the skin particularly, are quite uncommon in negroes.

TRANSPLANTATION OF HUMAN TUMORS

One may think of malignant tumors in man as coming under two general classes: one, malignant because of an innate biological change in the cell so that the name "virulent" might properly be applied to it; and a second, which consists of viable cells capable of growing locally or in remote places when transported there. This second group may be called malignant by accident. The first are the usual carcinomas and sarcomas which actively invade normal tissues, metastasize widely, and consist of greatly anaplastic cells with all the changes characteristic of malignant growths. The second comprise those tumors which we look upon as "locally malignant" or which may be transplanted, but rarely metastasize. There are typical members of each group, but the line of demarcation between some of them is not sharp. The first group corresponds roughly with spontaneous malignant (inoculable) tumors in animals; the second, with artificial tumors (transplantable) as previously defined (not tar cancers and similar tumors).

Examples of the second group are many. The embryonal fibrosarcoma of children consist of undifferentiated mesenchymal tissue which forms both connective tissue and thin-walled vascular channels. This tumor grows slowly, infiltrates moderately, but usually does not metastasize. It frequently recurs after excision. It would probably transplant readily to another child. Such a tumor corresponds to the transplantable tumors produced in animals by engrafting embryonic tissue. The cells simply have the ability to grow so long as ample nourishment is provided, and, in a sense, have no malignant intention. Other examples are adamatinomas, chordomas, "mixed" tumors of the parotid, and, in a less degree, basal celled epitheliomata.

Tumors in the human which transplant themselves without actively metastasizing are best illustrated by the papillary adenocystomas of the ovary. These may be regarded as fairly safe tumors until they rupture. When spilled into the peritoneal cavity, however, the cells of the tumor have the property of continued growth, and may prove to be malignant "by accident." That normal tissue may behave in exactly the same way has been shown by Sampson and by Jacobson in the case of endometrial transplants. This misplaced tissue continues to grow, and is entirely similar to a locally malignant tumor in its behavior.

Naturally, deliberate attempts to transplant tumors from man to man are not numerous. Coca[8] records the autotransplantation of cancer into the abdominal wall from the use of ground-up cancer tissue (Coca and Gilman's "vaccine"), and Coffey[9] records three others. Cornil[10] mentions the successful grafting of a sarcoma and an adenocarcinoma to other parts of the same persons bearing them. Hahn grafted[11] an epidermoid carcinoma from one portion of the body to another. Among those cases treated with fresh or phenolized tumor emulsion there were some injected with tumor tissue from other individuals. There are no reports, however, of such transplants growing.

SPONTANEOUS RETROGRESSION OF TUMORS AND IMMUNITY

Transmissible tumors of rats, mice, chickens, and other animals occasionally undergo spontaneous retrogression. In the case of chicken sarcomas this usually occurs in older animals, and as suggested previously, this may be influenced by the ripening of the sex glands. In most of these animals the tumor will grow for a while, remain inactive for a period, and then slowly regress and disappear. Similar occurrences are found in the case of human tumors. Cases are reported by Rotter[12] (carcinomas of the rectum), Senger[13] (carcinoma of the mouth), Crosbie[14] (lip), and Gaylord and Clowes[15] (chorion epitheliomas). Flesch[16] reported a huge ovarian carcinoma with metastases which disappeared. Wells[17] mentions a case in which there was spontaneous disappearance of a carcinoma of the colon which reappeared fifteen years later. Similar cases are being mentioned in current literature, but one must be exceedingly critical of many of them. There are enough authentic cases, however, to prove the exception. That some systemic factor or factors develop in such individuals and do not in others (but *are* present in totally immune persons) there can be no doubt. There is not enough evidence to prove that purely local causes are responsible for all these cases. Whether it is possible to transmit those factors to other more susceptible individuals remains to be seen. If they are entirely hereditary or racial in character, the chance for a systemic treatment for cancers

seems far remote. Active immunization against experimental tumors has been claimed by Stickler [18] and others, but this immunity could not be transmitted passively to another animal.

FACTORS WHICH ALTER THE RATE OF GROWTH OR SUSCEPTIBILITY TO TUMORS

That tumor growth may be affected by various conditions, natural and artificial, has been shown by both clinical observation and experiment. The rapid growth of tumors of the breast during the period of lactation, as opposed to that in the inactive breast, is a striking illustration of the presence of a growth-promoting substance. That this is not entirely due to an increased blood supply is shown by the more rapid growth of breast carcinomas generally in young sexually mature women in the absence of lactation. The so-called "inflammatory cancer" of Handley may cause death from widespread metastases in as short a period as six weeks, and these occur only in young women, most of whom have not been pregnant.

Many artificial methods have been used in attempts to alter the growth of tumors. Excluding actual destructive agents (x-ray, radium, corrosives, the cautery) their number and variety are legion. Any protein or colloidal solution may affect some tumors, perhaps most frequently causing an acceleration of growth with consequent necrosis, and so producing a false impression of benefit. Glandular extracts of many kinds (thyroid, thymus, pituitary, adrenal, spleen, and others) have been used, mostly without effect. But I wish to show how some manipulations may alter to at least a slight degree the progress of tumors, modify their usual course, or sometimes cause complete retrogression. If it were not for these isolated instances of apparent effect, one would be entirely justified in declaring that any attempt to treat tumors, now or in the future, as systemic diseases capable of being influenced in any way by chemical factors would be hopeless, unwarranted, or even absurd.

Space does not permit detailing even a small proportion of the experiments which have in some way modified tumor growth or susceptibility. For the sake of brevity, the following instances are merely catalogued to point out the many trends which research has taken.*

Removal of the spleen seems to make some animals more susceptible to tumors (Murphy [19] Peracchia and Castellano [20]).

Parathyroid hormone caused rat tumors to grow more rapidly than in controls (Goerner and Shafiroff [21]).

A diet deficient in potassium caused a retardation in growth of mouse sarcomas, and complete retrogression in some (Langfeldt [22]).

Insulin caused a more rapid growth in transplanted rat sarcomas (Barral and Cade [23]).

A diet deficient in vitamin B causes a retardation in the growth of tumors (Caspari and Ottensooser [24]).

Thyroid extract causes an acceleration of the growth of tumors (Flaks [25]).

Adrenalin causes a more rapid growth of cancer cells (Baroni [26]).

Adrenal cortical extracts have no effect on the longevity of chickens suffering from a fibrosarcoma (Connor [27]).

Thymus extract has little or no effect on tumor growth, behaving as a foreign protein (Elsner [28]).

Decreased atmospheric pressure caused a high percentage of retrogressions in rat sarcomas (Sundstroem [29]).

One could continue indefinitely enumerating methods or substances which modify in some way the growth of tumors. With the exception of the experiments reported by Sundstroem, some cases treated with colloidal lead, and the rare cases reported by Coley in which his mixed toxins were used, practically no cures have resulted from this great mass of experimental work. But it shows what I am trying to point out that the life history of many tumors *can* be modified, they *can* be made to grow faster, or slower, and in a few cases *can* be made to disappear. The wide variety of methods used, the number of different species of animals studied, and the variation in types of tumors which are affected in different ways by the same substances, indicate also that probably no single substance or method will ever be found that will act the same way on all tumors. But these very facts indicate that fundamental research in cancer is now more important than ever, and that though a critical, even skeptical, attitude must be maintained in regard to all phases of work on tumors, complete and abject submission to an almost insurmountable problem is not necessary.

* For a good review of this subject, see Woglom, Cancer Review, IV, 129, 1929.

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DISCUSSION

HOWARD O. BALL, M. D. (The W. K. Kellogg Foundation, Los Angeles).—This paper points out very aptly many of the difficult and only partially solved problems connected with the study of malignant tumors, clinically or experimentally. The questions of *how* and *why* for even the observations presented here remain largely unanswered. Species specificity for transplantable tumors is no longer specific. German workers have recently recorded the transplantation of a human tumor (carcinoma of cervix) to white mice.

I heartily agree with Doctor Connor that a great need for fundamental laboratory work exists; and an important field, I think, is chemistry. We need more specific reactions for organic substances when present in small amounts in tissues or body fluids. We need histochemical reactions in the microscopic study of cancer tissues, and cancer cells. The explanation of many of the problems of the transmissibility, and possibly even of the hereditary susceptibility of malignant tumors, may finally be chemical. Such a knowledge would help us better to interpret the exceptions which exist. It would certainly indicate whether malignant diseases should be considered as having a common etiology, and thus whether any single procedure could ever be reasonably expected to modify the course or exterminate the existence of a malignant process.

Every present-day method of treating malignant diseases is empirical. Rational therapy can only follow more knowledge of a fundamental character, particularly as regards etiology.

❦

H. J. ULLMANN, M. D. (Santa Barbara Cottage Hospital, Santa Barbara).—Doctor Connor's paper when published will be of great value as a reference work to all those doing research in cancer. It should be read by all surgeons, radiologists, and clinicians, who are dealing with cancer, so that they may think with knowledge and not become too enthusiastic over the regression of a few tumors following the use of any new method of treatment. It is only by the observation of large numbers of tumors in comparison with controls that any method of treatment can be properly evaluated. I was much interested in the suggestion that the increased necrosis or a liquefaction of some tumors following the injection of various substances might be due to an acceleration of growth with choking off of the blood supply, rather than a direct effect on the tumor tissue itself. This is undoubtedly a factor or possibility that must be taken into consideration. We have lately been able to study such effects. Bischoff and Maxwell, in our laboratories, have found that the Allan-Doisy follicular preparation, corpus luteum extract, and four adrenal extracts, when injected subcutaneously into rats, brought about an early instance of liquefaction or opening of R-10 sarcoma without effecting the incidence of regression.

I do not believe it possible, on the basis of our present knowledge of cancer, that any single substance or method of treatment will ever be found that may be used for all types of malignancy. To me it is as absurd to look for a single cancer cure or treatment as it is to look for a single cure or treatment for "infectious disease." And the treatment of all forms of malignancy by one method is equivalent to treating such infections as malaria, syphilis, and pneumonic plague, with the same remedies and procedures.

❦

W. T. CUMMINS, M. D. (Southern Pacific General Hospital, San Francisco).—The world's major medical subject appears undeniably to be a biochemical problem. Each of the main types of spontaneously developing malignant tumors may be caused by a specific, and possibly widely different, pathologic metabolic product, or group of products. The subject of immunity and susceptibility in lower animals, as well as in human beings, is as conspicuous in the problem of neoplastic study as it is in infectious diseases. Spontaneous retrogression and disappearance of neoplasms and their retrogression, in consequence of protein inoculation, are subjects of great interest.

Exhaustive studies of histochemical conditions in normal, abnormal non-neoplastic and neoplastic tissues may illuminate the subject. This work is being carried out apparently by a very limited number of investigators.

The topic presented by Doctor Connor has been elaborated most interestingly and well, with the presentation of the facts and of the problems that confront the investigator.

To the progressively increasing army of workers throughout the world, there must be added a host, all of whom, well trained, must attack the neoplastic problem for its final subjugation.

TRICHORRHEXIS NODOSA—A CLINICAL PROBLEM*

REPORT OF CASES

By CHARLES R. CASKEY, M. D.
Los Angeles

DISCUSSION *by Stanley O. Chambers, M. D., Los Angeles; Hiram E. Miller, M. D., San Francisco; H. J. Templeton, M. D., Oakland.*

IT was with considerable hesitancy that I decided to write upon a subject about which so little is known. However, having observed twelve cases of a supposedly rare condition during the past year and having made some observations on the course and treatment of a few of them, I deem it worth while to report these cases at this time. If this incomplete report stimulates further study its aim will have been attained.

In order to obviate any confusion that may exist on the part of my hearers concerning the nomenclature of the subject of this essay, the following terms are defined: Trichorrhexis nodosa, as the name implies, is characterized by the presence on the shaft of the hair of one or more irregularly spaced, small, grayish nodes. Microscopically, these nodes at that point show longitudinal splitting of the hair, resembling two small paint brushes jammed end to end. Trichoclasia, essentially a later stage of trichorrhexis nodosa, is the transverse fracture of the shaft of the hair at the middle of the node from traction or bending, while trichoptilosis designates a longitudinal splitting of the shaft of the hair into two or more fibrils.

* Read before the Dermatology and Syphilology Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

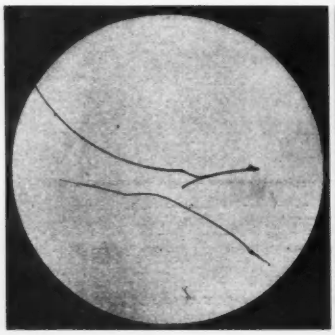

Fig. 1.—Hair stubs from Case 1. Both are small and poorly nourished hairs. Note the nodes near the bulb in each stub. The upper hair illustrates trichoclasia. Transverse fracture of the node is almost complete. The stubs were removed with very little traction. This shows definitely the connection between trichorrhexis nodosa and the loss of hair in this case. These stubs were obtained only after careful and close search of the affected portion of the scalp and were the last affected hairs found. Ordinarily they would have been removed by combing, washing, or brushing.

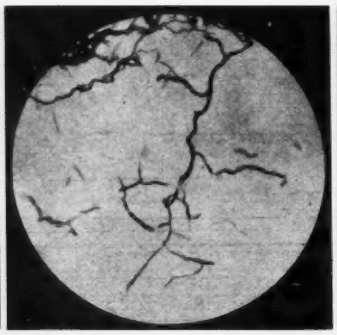

Fig. 2.—Photomicrograph of organism in Case 2. Culture six days old. Branched mycelia and beginning spore formation shown.

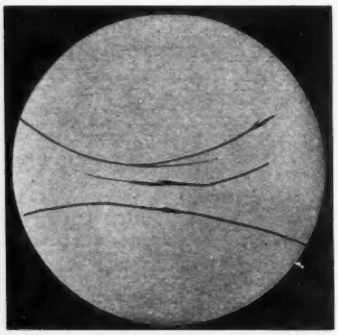

Fig. 3.—Trichorrhexis nodosa (two lower hairs). Trichoptilosis (upper hair). From Case 3.

CAUSATIVE ORGANISM

As recently as 1928 Marcoglou reviewed the literature to date; hence, further comment in this contribution seems unnecessary. Marcoglou reported negative cultures and drew no conclusion as to the etiology.

In reporting this small series of cases, I wish to call attention to the cultural findings in two of them. While this percentage is small, it approaches the findings in other bacteriological tests. We do not know why some organisms are difficult to cultivate on artificial media; we theorize that the media do not approach the soil from which the organism was taken. In theorizing, in the case of trichorrhexis nodosa, it is possible that the organism here cultured gains entrance into the hair shaft within the moist portion of the follicle and there begins to disintegrate the hair while it is growing upward, the fungus gradually dying after the hair grows beyond the moist portion of the scalp. In this way a noded or split hair that had grown out some distance, if taken for culture, would be less likely to produce a growth. Material used for culture in this investigation was taken at random. Some of the diseased hairs were plucked out and others just cut off and planted. This fact was not noted when the records of plantings were made. Some cultures did not produce a positive growth on the first or second planting. Four to eight affected hairs were planted in each culture tube. The value of multiple plants teaches us that we should not, as in all fungus studies in particular, give up the direct search or cultural test until after many trials have been made. Think of the persistence of Castellani, who examined for nineteen consecutive days the scrapings from a single case of pruritus ani before finding the causative organism. It is a well known fact that clinically positive dermomycosis frequently offers negative direct and cultural evidence of causative organisms. I believe figures have been established to show that such failure occurs in 50 per cent of attempts, although repeated examinations raise the incidence markedly.

REPORT OF CASES

Case 1.—P. S., a male, age twenty years, came to the clinic complaining of loss of hair in the parietal regions. A tentative diagnosis of alopecia prematura was made. There was no definite bald area, but a general thinning and shortening of the hair on each side. It looked like the beginning of hair loss which terminates in the typical bald head. In this case the loss of hair was rather sudden and confined, at first, to the left frontoparietal area where for a time many hairs which were only loosely attached could be removed by gentle traction. In a week the right frontoparietal area was noticeably thin. There was no evidence of pityriasis sicca, oleosa, or a true seborrheic dermatitis, and the scalp was apparently in a healthy condition. The patient gave a history of not wearing a hat for several years except now and then on special occasions. His care of the scalp consisted of a soap and water shampoo every two weeks. He had not been using any tonics or barber-shop preparations. A tonic was prescribed but did not seem very efficacious. He complained that his hair was splitting and breaking off. Not much attention was paid to this complaint at first, but I promised that if he would bring some combings I would examine some of the hairs under the microscope. Typical trichor-

Fig. 4.—Drawing of organism in Case 2, showing life cycle from spore through mycelia formation back to the spore stage. (By courtesy of Dr. Robert A. Stewart, University of California, Department of Bacteriology.)

rhexis nodosa and trichoptilosis were found in this sample. To the unaided eye no hairs back of the center of the scalp were affected, and at no time during my observation of this case could diseased hairs be found on the scalp except in the above mentioned areas.

After numerous plantings of noded and split hairs, a growth appeared which will be described later. At one time a number of hair stubs were planted which gave a good growth after two weeks. The stubs almost disappeared. What were left were soft and broke up easily when pressed out on a slide. This is the best evidence I have that the organism feeds on and destroys the hair. This patient is still under observation. No affected hairs have been found on the scalp for three months and the hair has grown thicker. With the disappearance of the trichorrhexis nodosa the alopecia has improved.

The treatment in this case was as follows. The entire scalp was shaved and ultra-violet light treatments were given every week or two. For a time, at night, biweekly inunctions of the scalp with an ointment containing two per cent salicylic acid and three per cent sulphur was used. This was shampooed out with tar soap the next morning. A euresol, bichlorid, and salicylic acid lotion was used each morning. Fowler's solution was given internally. Most of the time the patient wore no hat and the hair was kept clipped short. The result has been an arrest of the falling of hair and a partial regrowth.

* * *

Case 2.—D. M., a girl, age thirteen years, came with the complaint of loss of hair of a month's duration. The history, as told, was that the onset appeared as a small crusted spot on the top of the head which seemed to disappear with the application of tincture of iodin. After this the hair came out rather rapidly. The patient was well nourished and in good health. This case presented a large spot of thinned hair on the vertex of the scalp about five or six inches in diameter. In places there was evidence of a new growth of hair. There was no evidence of pityriasis sicca, oleosa, or seborrheic dermatitis anywhere on the scalp.

Unfortunately this patient made only one call at the office, but luckily two plants of the affected hairs were made on Sabouraud's glucose media, the results of which will be referred to later.

* * *

Case 3.—Mrs. R. H., age thirty-four, did not come in on account of a hair condition. She states, however, that her hair comes out rather freely when combed. Two independent cultural studies carried out in this case from material taken on different dates yielded an identical Nocardia-like fungus. The organism has not yet been submitted to a mycologist for definite classification. Its life cycle is a little more rapid than that of Cases 1 and 2, and it is somewhat smaller in size. Cultural and microscopic appearances, however, are very much like those of the other two cases. This emphasizes the fact that similar, though not necessarily identical, organisms may produce the same final gross pathology.

CULTURAL STUDIES

Cultural studies were carried out by planting the affected hairs, four to eight to a single slant, on Sabouraud's glucose media. Several slants were made if material was available. The tubes were kept at room temperature in an upright position and in a place where some light was available.

The growth of the organism in these two cases was slow. A transplant will cover one-third of the surface of an agar slant in one month. It will grow at room temperature, but its optimum growth is at 37 degrees Centigrade. On Sabouraud or glucose agar a dry, compact, white, powdery surface growth is produced. As the growth becomes older there is some crumpling of the media. A distinct earthy odor is apparent when an old tube is opened. The organism does not ferment lactose, sucrose, maltose, mannite, glucose, levulose, galactose, glycerol, raffinose, or zylose. It does liquefy gelatin and gives a grayish white rugose growth on potato. It would not grow in the absence of free oxygen. Inoculation into the skin of a guinea pig was negative, although a small reddish nodule persisted for three days without marked inflammation and disappeared completely in about a week.

Cultural material was examined microscopically with the following findings. The fungus is a very small organism and requires an oil-immersion lens to study it. Like the Nocardia group, it appears as a chain of bacteria. It shows distinct branching and forms numerous spores. It is Gram-positive.

According to Castellani's classification this organism belongs to the order Microsiphonales, family Nocardiaciae and in the genus Nocardia.

Fig. 5 (Case 1).—Taken at beginning of treatment.

Fig. 6 (Case 1).—Six months after instituting treatment.

OBSERVATIONS OF TEN OTHER CASES

I have observed this condition, trichorrhexis nodosa, in ten other cases, which are not included in this report since I was unable to carry the cultural tests to completion. Most of these cases sought treatment for some form of hair trouble. In three cases of alopecia areata this nodose condition was discovered in near-by hairs. The finding of these twelve cases of trichorrhexis nodosa during the past year leads me to believe that this supposedly rare condition is, on the contrary, rather frequent and that all cases of hair affections should be examined carefully in good daylight. I am sure if you will do this, you will find, as I have found, many cases of this affection in the future.

These studies have led me to believe that trichorrhexis nodosa may be a low-grade infection, causing very little follicular reaction or defense and as a consequence gradual loss of hair. I am aware, however, of the fact that I have not proved that this fungus which we have isolated and described is the etiological factor in trichorrhexis nodosa. It may have just been an accidental contamination of the hair. It is so small that it was not possible in this study to definitely stain it within the hair and thus demonstrate its presence, although at times I thought I could see it in the unstained hairs. Hence, I have not been able to prove to my satisfaction the pathogenicity of the fungus for the hair. In one of my tests, I planted normal sterile hairs on media and among them a culture of the organism. I was elated when I thought that the sterile hairs had become affected, but spoiled them by softening in hydrate solution in an attempt to stain them. When I repeated the test I was not so sure of my previous findings.

In closing I wish to state that I draw no definite conclusions from these preliminary studies in a few cases. It has just been a small endeavor on my part to settle the etiology in a still obscure condition of the hair. I am desirous of knowing whether this is an etiological entity and what part it plays in the alopecia group, the etiology and treatment of which are very unsatisfactory. Until the etiology of any disease is known there can be no sound therapy.

1930 Wilshire Boulevard.

Note.—For assistance in the isolation and identification of the organism in these studies, I am indebted to Dr. Robert A. Stewart of the department of bacteriology of the University of California at Berkeley, to Dr. W. W. Reich of the department of bacteriology of Stanford University, and to Dr. Roy Hammock of Los Angeles.

DISCUSSION

STANLEY O. CHAMBERS, M. D. (1260 Roosevelt Building, Los Angeles).—Such investigations as these by Doctor Caskey are exceedingly commendable and should add impetus to further laboratory research in this group of dermatoses. The isolation of an organism from pathological tissues is not *ipso facto* evidence of causation. Its consistent demonstration is, however, highly suggestive. The final requirement is the fulfillment of Koch's postulates, and it is to be hoped that Doctor Caskey will be as successful in this as he has been in the investigation as far as he has gone.

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HIRAM E. MILLER, M. D. (384 Post Street, San Francisco).—The cause of trichorrhexis nodosa has been a subject of discussion ever since it was first described by Wilson in 1849. The disorder is generally attributed to parasitic, mechanical, or nutritional causes. Bacteria have been isolated by numerous observers, but as far as I know this is the first time that a fungus has been recovered. This investigation has been of considerable interest, and we will all be interested in the complete and final report. In the meantime we must still consider that the fractures or nodes are the result of mechanical injury to a hair probably with a damaged nutrition and associated with heredity.

❋

H. J. TEMPLETON, M. D. (3115 Webster Street, Oakland).—Doctor Caskey's commendable work has not, as he states, definitely proved that a fungus is the cause of trichorrhexis nodosa. His positive results should stimulate him and others to undertake further studies along this line. One obstacle in his path is that of gathering sufficient clinical material, inasmuch as this condition is a rare one. We could help him if we would send him hairs extracted from any such patients we might see.

I would like to further emphasize Doctor Caskey's statement that one should make many plants of suspected material upon culture media when searching for fungi. In our work on epidermophytosis which is being done at the University of California, Lee Bonar has demonstrated that the proportion of positive findings is not only in proportion to the number of inoculations upon the culture medium but is much higher. Thus, if we increase the number of plantings by a certain per cent the percentage of positive findings increases not only to the same figure, but up to one considerably higher.

Inasmuch as Doctor Caskey is searching for fungi whose natural or acquired habitat is the scalp, I might suggest that he try special culture media such as have been used in searching for another scalp fungus, the pityrosporon of Malassez.

❋

DOCTOR CASKEY (Closing).—Doctor Lindsay asked if I had observed trichorrhexis nodosa in blonds. I have recently found two cases of the condition in light-haired individuals and do not think color of hair makes any difference in the incidence of this disease.

I agree with Doctor Chambers that it would be more conclusive if Koch's postulates could be carried out in such researches, but do not regard them as a final requirement. Koch's law has not been proved in the case of *Hansen's bacillus*, although this organism has been generally accepted as the cause of leprosy.

As Doctor Miller intimates, it will take further research to prove which of the theories, parasitic, mechanical or nutritional, is operative in bringing about this condition.

I am very glad to have Doctor Templeton emphasize the necessity for making numerous cultural tests in searching for microörganisms in diseases of the skin. One is inclined to become discouraged if the first few attempts are negative. However, we should remember that frequently the pathologist makes many examinations of sputum before giving a negative report in suspected tuberculosis. I am also pleased to have him suggest a special culture media for future use.

A REVIEW OF THE SECONDARY ANEMIAS

PART II*

By O. H. PERRY PEPPER, M. D.
Philadelphia, Pennsylvania

TRUE SECONDARY ANEMIA

We are now ready to discuss true secondary anemia—by which term let us understand ourselves clearly. We now mean anemia due to a definite, recognizable cause, no matter how difficult the discovery of that cause may be. The presence of a secondary anemia is a challenge to our diagnostic skill. Secondary anemia is not a disease, it is only a symptom; it must have a cause and this cause we must discover. There is danger in a too ready acceptance of the conception of frequently occurring idiopathic secondary anemia.

Idiopathic secondary anemia is an old concept, but it is receiving renewed emphasis today and in a manner with which I have little sympathy.

In a classification of secondary anemia issuing recently from one of the leading clinics of this country, all chronic secondary anemia is divided into three groups—a type due to hemorrhage, a type due to some organic lesion, and a type termed "idiopathic secondary anemia." The first two types need no comment, but chronic idiopathic secondary anemia is then subdivided into five types on the basis of the blood morphology.

These five subtypes are each to be recognized and employed as the indication for varying forms of treatment. This is going ahead of our established knowledge. We need such researches and we will be most grateful to him who establishes such new data, but until it is proved and simplified it is beyond our routine use.

Face to face with a patient with unexplained anemia, it seems to me our mental process is somewhat as follows: Is this one of the specifically recognized forms of anemiia—pernicious anemia, hemolytic ictero-anemia, sickle cell anemia, for example? Is it a case of secondary anemia and if so from what cause? Only after most exhaustive study would it ever occur to me to be tempted to make a diagnosis of chronic idiopathic secondary anemia—rather would I doubt myself and the adequacy of my search for the underlying undiscovered cause. Nor would I be amazed that my treatment of such patients was not more successful—how could I anticipate cure when I had failed to recognize the cause? For practical purposes a patient with secondary anemia is never idiopathically anemic.

The causes of secondary anemia are legion: hemorrhage, acute and chronic; infections; neoplasms; parasites; chemicals; irradiation; dietetic deficiencies, for example. Rather than discuss each in detail let me describe the blood findings of secondary anemia and then select for fuller discussion a few of the causes which are of special practical interest.

Secondary anemia may be of any grade of severity from the mild degree so commonly encountered as almost to persuade us to accept it as physiologic to the most intense and life-threatening anemia. Severity of anemia is no proof, in fact not even an argument in favor of its primary or pernicious nature.

Characteristically, a secondary anemia exhibits a reduction of the hemoglobin content of the red cells—in other words, the color index is low or at least is below one, or to be even more guarded in our statements, the color index is not above one. In terms of red cell count and hemoglobin percentage, this means that the hemoglobin is reduced more than the red cell count. The extreme example of this is seen in chlorosis, and those instances of secondary anemia which exhibit this relationship, to a marked degree, are termed chlorotic anemia.

At the other end of the scale are those instances of slowly developing secondary anemia which most closely simulate pernicious anemia. These have a color index approaching or equal to one, but not above. They do not, however, present any increase in the size of the red cells and to my mind they are clearly secondary anemias no matter how much they may approach primary anemia in some respects. This group includes especially the instances of anemia from certain growths of the colon and from certain parasites.

The further hematology of secondary anemia adds little to the information given by the blood count. Usually the red cells are of subnormal size and of normal resistance to hypotonic salt solution. The white cell count varies according to the underlying condition and the acuteness of the anemia. Similarly the percentage of young red cells varies with the activity of the bone marrow's response to the anemia, high after an acute hemorrhage, low in the late stages of a long-drawn anemia approaching an aplastic picture.

CLINICAL TYPES OF SECONDARY ANEMIA

Acute Hemorrhage.—Of the many important forms of secondary anemia, let us first mention that following acute hemorrhage. We must remember that reduction of the blood volume is in one sense anemia—but not in the usual sense. Anemia in its clinical sense does not appear instantly after an acute hemorrhage, in fact hours must elapse before the passage of fluid into the blood from tissues and gastro-intestinal tract restores the blood volume to normal and by dilution lowers the number of red cells per unit of blood. Thus anemia results.

The body has reserves of blood cells in spleen and bone marrow ready for emergency calls and a considerable acute loss of blood is required to cause any distinct degree of anemia. The blood loss at most surgical operations is far below the amount required to bring about anemia. When a patient is found to be severely anemic promptly after what seems to be a single acute hemorrhage, one is quite safe in assuming that anemia was present before. This is the case very often

* Editor's Note.—Part I of this contribution appeared in the April issue of California and Western Medicine, page 233.

with patients with duodenal ulcer. A sudden hemorrhage may seem to lower their hemoglobin to 40 per cent, their red cells to 3,000,000; but in actual fact the ulcer had been bleeding insidiously for weeks before the acute hemorrhage and the blood count before the severe hemorrhage was probably 60 per cent of hemoglobin and 4,000,000 red cells. The more acute the hemorrhage the more marked is the general bone marrow response, and the more evidence of bone marrow activity appears in the circulating blood.

Obscured Anemia.—Just as dilution of the blood must occur after acute hemorrhage before anemia is demonstrable by blood count, so dehydration of the patient may wholly hide a fairly severe degree of secondary anemia. This is seen, perhaps, most markedly in cases of pyloric obstruction. The patient is sent to the hospital for operation—he is dehydrated from loss of fluid incident to the pyloric closure. The blood count reveals a normal or even mildly polycythemic picture. In preparation for operation large amounts of fluid are supplied by vein and bowel—the patient improves greatly; his weight rises, but a second blood count reveals a far lower level than on admission. This fall may be misinterpreted as being due to hemorrhage; or to the progress of malignancy; its true explanation is the relief of the dehydration. The higher figures of the first count were for that patient a sort of physiologic polycythemia. It is always well to remember this possibility and repeat the blood count after preoperative preparation; it may reveal such a state of anemia as to make it advisable to give a preoperative transfusion.

This same obscuring of anemia by dehydration is a common observation in severe infection with high fever. Only after the fever breaks does the patient look pale and washed out and the blood count reveal the true level of anemia.

Secondary Anemia From Chronic Hemorrhage. There is no more familiar fact than that severe anemia may result from long-continued or oft-repeated slight bleeding, but it is a little hard to keep in mind how very severe the anemia may be, and from how very inconspicuous a loss of blood the anemia may arise. It is like the dropping water which in time wears away the stone.

Hemorrhoidal bleeding supplies many instances of this as, for example, the following case: W. B. (Med. Clin. U. of P. H. 1928, A. B. 548), a male, thirty-two years of age, was admitted with the history that he had had bleeding from the rectum for seven months. He was first told he had "bleeding piles," but later a suspicion of cancer of the rectum arose as a result of loss of weight, severe anemia, and a roentgenologic study with barium enema. On admission, the blood count was: hemoglobin, 20 per cent; red blood cells, 2,620,000; white blood cells, 6000; marked changes in morphology of red blood cells; differential white count, normal; reticulated cells, three per cent.

No neoplasm was found, but bleeding from hemorrhoids was demonstrated; hemorrhoidectomy performed followed by a prompt rise in the count to 40 per cent of hemoglobin and 3,350,000 red blood cells. This degree of improvement in the blood level rid the patient of all the complaints arising from the anemia.

This is but one case of many which I might quote and which most of you can duplicate from your own experience. Often the bleeding of hemorrhoids is not recognized by the patient and may not be seen on rectal or proctoscopic examination. In unexplained secondary anemia the clinician should be stubborn in abandoning his suspicion of this cause.

Hemorrhage from gastric polyp is also a most important and interesting cause of profound anemia. My first experience with it was a tragic one. In 1918, while on duty at the Base Hospital at Camp Meade a soldier was admitted to the medical service of Major Nellis B. Foster. The young man was intensely anemic without any cause which we could discover with the somewhat inadequate means at our disposal. After our best efforts at diagnosis we unwillingly termed the case one of pernicious anemia, gave five transfusions and discharged the patient very much improved and with normal or almost normal blood picture.

Eighteen months later, after the war, he came to me at the University Hospital and was found to have a gastric polyp which had undergone malignant change. In retrospect, there is not much doubt but that his original anemia had been due to bleeding from this polyp which at that time was probably nonmalignant and could have been easily and permanently removed. As it was, there were metastatic lesions and the patient survived the operation only three weeks.[5 6]

Hemorrhage is a common occurrence not only from malignant, but also from benign gastric polyps. As Miller[5 6] of our clinic recently wrote, "If a bleeding gastric polyp is not considered in every case of obscure anemia, certain cases will be entirely misdiagnosed."

Carcinoma of Colon.—The same remark might with almost equal truth be made of cancer of the colon. Here slow bleeding, malignancy and sometimes disturbed nutrition are present, and it is difficult to evaluate the importance of these several factors as possible causes of the anemia. When the anemia is intense and blood is found in the stools, it is often difficult to say whether the anemia is the result of the bleeding or the bleeding a result of the anemia. Unfortunately, in extreme anemia oozing may occur from various mucous membranes and both aggravate the anemia and confuse the diagnosis.

Cancer of the colon is, perhaps, that cause of severe secondary anemia which produces a blood picture most closely approaching that of primary anemia. This must be constantly kept in mind to avoid diagnostic errors.

Secondary Anemia in Infections.—Among the infections which have a special tendency to cause a severe secondary anemia are: acute rheumatic

fever, streptococcus viridans endocarditis, malaria, syphilis and spirilla diseases in general.

All infections of long duration, such as typhoid fever and tuberculosis, are accompanied by anemia. Personally I have very seldom seen tuberculosis masquerade as an anemia although this is frequently reported. In syphilis, severe anemia is more often the result of treatment than of the disease.

In this connection it is well to remember that most patients seriously anemic from any cause will exhibit some degree of fever. This must not be used as an argument to favor an infectious cause for the fever, as is often done. For example, let the blood be restored to normal by liver therapy in pernicious anemia or other means and the fever will disappear.

Chemical poisons may cause severe secondary anemia of varying types: potassium chlorate, rapidly by blood destruction; lead more slowly, probably by action on the erythrocytes, and benzol by a damaging action on bone marrow function. These are but examples of a multitude of chemicals to which we are daily exposed—in foods, in the city air some must breathe, in many unsuspected contacts. It is hard to believe that we know all about this topic in view of the rapidly developing science of industrial chemistry. We must be on the alert.

Cases come to mind to support this view. Some years ago an unexplained patient with anemia stayed for weeks in our women's ward. Improvement seemed to follow the clearing up of oral sepsis, but it was not until it was discovered that right under our very eyes the patient was daily using white lead as a face powder, was the true nature of her anemia discovered. Similarly hair dyes may cause anemia from their content of lead.

Another patient, a man, had an obviously aplastic anemia; no explanation was forthcoming. He was questioned as to his work; he was a salesman "on the road" with some line, innocuous at least to the seller. It was not until some days later that a chance remark led to the information that he had purchased an interest in a rubber goods factory and had been doing a little experimenting with benzol and other solvents. Death occurred in spite of our best efforts.

There are literally scores of other causes of secondary anemia which might be mentioned. We have had referred to the medical clinic at the University Hospital cases of malaria, of chronic nephritis, streptococcus endocarditis, all with the referring physician's diagnosis of primary pernicious anemia. We have had an advanced thinker admitted in such a state of anemia that it was not until after transfusion that we were able to elicit his story of such a strict vegetarianism that he would not take a capsule for fear that it was made of gelatin from a horse's hoof. Doctor Kern of our clinic will shortly put this remarkable case of dietetic anemia on record.

Nothing is to be gained by following this thought further. What I have said is perhaps familiar and trite, but those of us who deal with the patient know how often we fail to get to the bottom of a case of secondary anemia. Just before I left the East I looked over again a group of records in our record room on which the diagnosis of "secondary anemia" is given as the primary diagnosis. A study of these records leads to a sense of inadequacy and humility in me rather than to a desire to label them idiopathic and let it go at that.

TREATMENT OF SECONDARY ANEMIA

First, search for the cause; second, keep on searching; third, look for secondary coöperating causes; fourth, treat the cause. During this time it may be necessary and advisable to treat the anemia, but do not let the doing of this take one's mind off the search for the original cause.

The following case history will point this moral: A woman in her forties, the wife of a college professor, spent the four fall months of 1929 in, perhaps, the leading mental sanitarium of the East. There was no mental disease, but extreme nervousness and despondency owing to unhappy home conditions.

On October 24 at the sanitarium the blood count was: hemoglobin, 62; red blood cells, 3,750,000. This anemia was casually attributed to bleeding hemorrhoids, for blood had been observed on the stools for several months. She had also become increasingly constipated and had been losing weight and strength. It was not until the middle of January 1930 that the psychologists noticed her increasing pallor; the hemoglobin was found to be 45 per cent, and she was hastily returned to Philadelphia. On admission to our hospital the hemoglobin was 36 per cent and the red blood cells 3,000,000.

A rectal examination revealed an enormous ulcerating carcinoma. After several transfusions the growth was successfully removed by radical surgery and today the patient is in excellent health with a normal blood count and but little disturbed by her colostomy, which is quite well behaved.

This brief history is most significant and could be made the text for many remarks on the need of thoroughness, the danger of overspecialization, et cetera.

Transfusion.—When the anemia is very severe, it may be wise to transfuse at once. This will protect the patient for the moment from the immediate dangers of severe anemia and will give time for further search for the cause of the anemia. By raising the blood level one can often also put an end to the mucous membrane's oozing which may confuse the recognition of the primary cause. Furthermore, one or more transfusions will often be necessary to put the patient into condition to undergo treatment for whatever primary cause is discovered.

I firmly believe that transfusions are not resorted to freely enough in cases of moderate secondary anemia, but are used far too freely and uselessly in hopeless cases of incurable dis-

ease. The prolongation of a suffering life is not a very desirable indication for transfusion. In secondary anemia, however, they are of inestimable value and the danger of reaction is far less in secondary anemia than in a primary blood disease.

In secondary anemia from infection a transfusion is very valuable not only to help combat the infection, but in cases where the infection is at an end and the patient faced by a long, slow recovery the convalescence may often be much shortened by a transfusion.

Certain treatments of disease cause a secondary anemia or an increase of the anemia due to the disease itself. Thus in leucemia of the myelocytic type, it is often anemia which forces a cessation of x-ray or radium treatment, and severe anemia is not uncommon in the lead and radium treatment of inoperable cancer. In such cases transfusion is clearly indicated.

In secondary anemia, then, transfusion should be employed for a variety of indications and without waiting for an alarming degree of anemia to develop. I have only one possible complaint about transfusion in chronic unexplained secondary anemia, which is, that occasionally following transfusion the anemia for the time being remains relieved and one neglects to search for the cause. In primary anemia, transfusion may be needed to tide the patient over until the specific maturation stimulants have time to act.

Iron.—The modern investigations confirm the long-established clinical belief in the value of iron in the treatment of anemia. Also the modern view agrees with older, that it is in chlorosis and in the secondary anemias most closely resembling chlorosis that iron is most efficacious.

It is an interesting corollary on our reactions to scientific advances that when it was appreciated what a small amount of iron was present in the total blood the doses of iron given therapeutically became smaller and smaller. Only recently have we returned to larger doses and the results have been far better. It may seem illogical to deal in quantities of iron many times in excess of what would seem to be the body's maximum needs, but the results justify the procedure. Possibly iron acts also through the so-called "salt action" and only when supplied in larger amounts.

In those secondary anemias which are benefited by liver in one form or another, iron in large doses enhances the liver action. The literature contains many reports to indicate that treatment with liver and iron is more effective than the use of either alone.

Concerning the importance of copper as an adjuvant to iron treatment, the evidence is far from satisfactory.

Only the empiric evidence of the past supports the use of arsenic in anemia.

When iron is indicated, give it in a simple form, such as reduced iron, and give it in large doses. Schulten[7] reports good results from six grams of reduced iron daily, given in thirty three-grain pills each day. Smaller doses gave no such benefit, while one patient improved only when the dose was increased to nine grams a day.

Diet.—There is no doubt concerning the accuracy and the fundamental importance of the studies—many of the most brilliant having been done in California—of the influence of diet on blood regeneration. These studies, which led directly to the modern liver treatment of pernicious anemia, must not be lost sight of.

Nor is there any doubt that severe anemia will result from grossly abnormal and deficient diets. The case already quoted is an example of this, and Minot and others have reported similar observations.

It is in such instances of anemia due to faulty diet that a change to an adequate well-chosen diet is of the greatest value. No doubt a diet rich in green vegetables, fruit, and red meat is a desirable adjunct to the treatment of any form of anemia, but alone it is curative only in truly nutritional and chlorotic anemias. Even in these one must often add iron, and perhaps liver as well to obtain rapid improvement. When the diet has been grossly abnormal, one is really treating the cause of the anemia in restoring the patient to a satisfactory regimen. As a rule, however, the wide margin of safety in the diet of this country makes it unlikely that an anemia has a strictly nutritional basis. Furthermore, in many cases it will prove easier to supply iron directly than to disturb a patient's fairly reasonable dietary by forcing foods supposed to be rich in iron. There is no good evidence that the iron of food is any more useful than iron administered directly, nor that organic iron is better than inorganic, nor that there is any choice between the ferrous and ferric salts.

Probably the vitamins have little usefulness in the treatment of any anemia unless the diet has been markedly deficient along this line.

With regard to the use of liver in the treatment of secondary anemias in general, it may be said that the evidence is rapidly accumulating to prove that the various extracts so valuable in the treatment of pernicious anemia are of relatively little value. Whole liver is far more effective in secondary anemia and should be employed in large amounts and in conjunction with iron. The newer liver extracts for use in secondary anemia have great promise, but have not yet proved their practical value.

Specific Erythropoietic Stimulants.—It is interesting to recall that all of the liver therapy of pernicious anemia grew out of studies of the effect of various foods upon experimentally produced secondary anemia. From this beginning we have seen the progression from whole liver to a great variety of liver extracts, fetal liver, hog's stomach, ventriculin, and extracts of bone marrow and spleen. We know the startling efficacy of various of these in pernicious anemia, but we are still far from sure about their action in secondary anemia. Which are helpful and in which form of secondary anemia? On the whole,

the results have been disappointing. Whole liver has been most efficacious, but perhaps the answer has been found in the isolation of a new fraction of liver potent in certain secondary anemias, although not so in pernicious anemia.

On a theoretical basis one might assume that those instances of secondary anemia whose blood picture most closely resembled pernicious anemia would be most benefited by the extracts potent in pernicious anemia. This is not the case, but it is true that benefit is most often obtained with these extracts in those instances of apparent secondary anemia which, through lack of recognized cause, one must term cryptogenic or idiopathic.

In an article about a year ago, Murphy [8] of Boston expressed amazement at the dearth of accurate information to determine the most effective treatment of the so-called secondary anemias from various causes. He then outlined the treatment for six different types of secondary anemia. This is the crux of our difficulties: secondary anemia is not a single disease, it is a symptom of many diseases, a condition brought about by many causes. There never will be one effective therapy for all secondary anemia. Should an extract be obtained which proved to be effective in stimulating blood formation in chronic secondary anemia, it would often fail unless the cause of the anemia was discovered and treated. In fact such an extract would do harm in that by its available efficacy it would lead to a less insistent search for the etiology of the anemia. In the final analysis the only true treatment of a symptom is the treatment of the causative condition.

CONCLUSIONS

We must bring this review to an end even if we have but inadequately covered the important subject of secondary anemia.

1. Secondary anemia is only a symptom, but it handicaps the sick, delays convalescence, and takes the zest of life out of many supposedly healthy persons.

2. Before making the diagnosis of secondary anemia, one should be sure to rule out the various other special forms of anemia.

3. The diagnosis—secondary anemia—implies a cause. Every effort to discover this cause must be made.

4. To treat secondary anemia and neglect the cause is stupid and criminal.

5. To treat the cause and neglect a severe secondary anemia is to increase the risk of wasting your efforts and the patient's time.

6. Severe secondary anemia is the strongest indication for blood transfusion.

7. Both cause and anemia should be treated in even the mildest case.

8. Diet alone should be expected to cure anemia only when the previous diet has been grossly abnormal.

9. When iron is to be administered, use a simple form but in large doses.

10. Do not employ the preparations intended for the treatment of pernicious anemia in secondary anemia. Use either whole liver or a preparation intended for use in secondary anemia.

11. Do not expect one form of treatment to act in all forms of secondary anemia.

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ENDOMETRIOSIS*

By ALICE F. MAXWELL, M. D.
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DISCUSSION *by Robert Glenn Craig, M.D., San Francisco; John C. Irwin, M.D., Los Angeles.*

GYNECOLOGIC literature of recent years contains no finer example of scientific research than is presented by the histologicoclinical studies upon the subject of ectopic endometrial tissue. Despite the general interest in the matter, so far the question of origin of this tissue has not been settled nor has terminology been determined. The frequency, wide distribution, variation and severity of symptoms demand identification and proper treatment of these lesions.

ORIGIN OF ENDOMETRIOSIS

Endometriosis, endometrioma, endometrial adenoma, müllerianoma, chocolate cysts, hemorrhagic perforating cysts of the ovary, Sampson's tumors and adenomyoma are a few of the synonymous terms applied to tissue resembling uterine mucosa histologically and functionally which is found elsewhere than in the uterine cavity. Although early writers (von Rokitansky, von Recklinghausen, Russell and Pick) had described tissues in the ovary and uterine musculature which were an exact prototype of uterine glands and stroma, Cullen, in his publications on adenomyoma of the uterus (1896) laid the foundation of our knowledge of endometriosis when he demonstrated that these tumors were invasive growths of the uterine mucosa. Following the appearance of Sampson's monumental work in 1922, new interest in the subject was stimulated which has furnished many interesting facts.

THEORIES OF ORIGIN

Von Recklinghausen ascribed the origin of the glandular elements of adenomyoma to embryonic rests of the Wolfian body or Müllerian duct.

Sampson has advanced the theory that pelvic endometriosis develops, not from embryonic rests, but from bits of endometrium or tubal epithelium which have escaped from the uterus or tubes during menstruation as a back spill and

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have attached and developed on the ovaries from which other transplants are broken off. He has emphasized: that implantation depends upon menstruation; that menstrual blood containing bits of endometrial glands and stroma are often seen coming from the fimbriated ends of the tubes during operations performed during menstruation; that the tubes are usually patent despite extensive pelvic adhesions (330 out of 342 women (Sampson)); the frequent association of endometriosis with conditions tending to favor backflow of menstrual blood, i. e., retrodisplacements and fibroids; and that transplants are usually found on the portion of the ovary where it is in direct contact with the tube. That menstrual mucosa is viable and can grow has been shown by successful inoculation of uterine mucosa on the pelvic peritoneum of rabbits and monkeys with the production of typical endometrioses (Jacobson). Moreover, Sampson has found menstrual mucosa actually growing in the venous sinuses of the uterus, and Cron, by recultivation, has kept such tissue alive in vitro for a month. Sampson, while strongly advocating the importance of the backflow of menstrual blood as cause of ectopic endometrium, has also demonstrated dissemination of this tissue via lymph and blood spaces, the same channels employed in the spread of cancer, and admits that metaplasia of coelomic mesothelium may create certain types of endometriosis.

The serosal theory is based upon the common origin of all the genital epithelia from the modified peritoneum of the urogenital folds. Hence the germical epithelium of the ovary, follicular epithelium, the invagination of the Müllerian ducts to form the endosalpinx, endometrium, endocervix and vagina have a common ancestor in the peritoneum. Factors which determine normal regional differentiation of the coelomic epithelium are not known, nor are its developmental potentialities exhausted, for in adult life further differentiation into endometrium and endosalpinx may occur identical with those produced in the embryonic phase. This theory is substantiated by finding in ovarian endometriosis all stages of development through which the epithelium passes, namely, that resembling the lining of the tube, endometrium with few glands and little stroma to the typical adult type with or without menstrual activity. If this be true, the ovary then is the point of origin rather than the intermediary host for the implantation of endometrial-like tissue.

EXCITING CAUSE OF GROWTH

Whatever the origin of these growths, the question as to the exciting cause that stimulates their activity is of much interest. Some investigators have referred to it an inflammatory irritation, the majority attribute the stimulus to biologic or chemical reaction referable to an excess of ovarian hormones.

DISTRIBUTION OF TUMORS

The distribution will be appreciated by enumerating its topical manifestations. Ovarian endometriosis usually presents as single or multiple small bluish purple areas on the surface of, or deeply situated in the gland, the color being due to the presence of tarry or cholocate colored retained menstrual blood. The cysts range in size from tiny dots to masses 15-20 cm. in diameter. Microscopically the tissue resembles uterine mucosa and reacts similarly to the menstrual stimulus with discharge of blood and desquamation of epithelium. Should tension or trauma cause the cyst to rupture, the contents scatter on the pelvic structures, initiate a peritoneal irritation with the formation of dense adhesions and begin a new growth that may invade the peritoneum, bowel, bladder and maintain the same vicious characteristics while the adnexa of one or both sides may be involved, the tubes are usually patent—a mystifying feature when the process was attributed to pelvic infection. The lesion may cause complete destruction of the ovary with dangerous adhesions to the bowel or may cause little local change and retrogress readily. Moreover, the frequent presence of endometrial tissue in the ovary may be a fertile source of ovarian neoplasms. Sampson believes that many nonmalignant cyst adenomas may have originated from this source. The commonest form of ovarian carcinoma closely resembles that of the uterus, which suggests that cholocate cysts with their retained chemically changed solutions may play an important part as an etiologic factor in ovarian malignancy.

Endometriosis of the uterus (adenomyoma) and uterine horns are too well known to be described. Rectovaginal endometrioses may be associated with similar ovarian lesions or occur independently. These tumors were formerly diagnosed as rectal cancer and caused the so-called "inflammatory stricture" of the rectum. Beginning as a small nodule back of the cervix, it invades the surrounding cellular tissue, bowel and may even encircle the ureters and occlude the rectum; vaginal involvement is shown by polypoid masses back of the cervix which bleed during menstruation.

Endometriosis occurs in the broad ligament, round ligament, especially in the extra peritoneal portion, as nodules of the labium which may become markedly invasive and be confused with sarcoma; in femoral and inguinal hernias; on the appendix which may cause right-sided pain with catamenia; on loops of the bowel, especially of the sigmoid rectum, where as hard elastic tumors they may simulate carcinoma; occasionally in the bladder where they cause dysuria and hematuria; in the umbilicus as small hard tumors which may discharge blood periodically from the navel, as menstrual fistulae in abdominal scars following laparotomy for pelvic operations, or appendectomy, and finally on the perineum and anterior vaginal wall, areas where metastatic nodules from fundal carcinoma are often found.

Symptoms.—Symptoms will depend naturally upon the structures involved, the extent of their invasion and the degree of peritoneal irritation. Abnormalities of menstruation are usually present, *i. e.*, acquired dysmenorrhea (70 per cent of cases); menorrhagia and metrorrhagia (50 to 60 per cent). Lower abdominal ache or pelvic fullness aggravated by the catamenia are frequent complaints. Constipation, rectal bleeding and dysuria coincident with the menstrual cycle are suggestive. Sterility is a very common complaint. Menstrual fistulae in laparotomy scars, or from the umbilicus, rectovaginal thickening and purplish vaginal nodules back of the cervix are characteristic findings.

The diagnosis will be made more often if the condition is kept in mind, for if careful inspection is made of the undersurfaces of the ovary and the peritoneum of the cul de sac, pelvic endometriosis is a surprisingly common finding. Sampson has found the lesion in 43 per cent of abdominal operations performed upon women between the ages of 30 and 50. Our own observations confirm this finding. The association with uterine fibroids and malpositions with the above symptoms are most suggestive.

Pelvic inflammatory disease may offer considerable difficulties in differential diagnosis; for the symptoms and pelvic findings (broad ligament masses, fixation and tenderness of the tissues, adherent, retroflexed, often myomatous uterus) are characteristics common to both conditions. The absence of an etiology for pelvic peritonitis or external stigmata of infection, the normal white blood count, and sedimentation time should indicate the basic pathology. Fibroids, ovarian cysts, appendicitis and carcinoma are not infrequent pre-operative diagnoses.

TREATMENT

Ectopic endometrial lesions are acquired accessory uteri and are dependent for their activity upon ovarian stimulation as is shown by their menstrual response, decidual reaction, and retrogression after withdrawal of the ovarian hormone. This relationship is the keynote of the treatment. Surgical procedures are entirely dependent upon the extent of the disease. The age of the patient and her desire for conservation should be considered, and here the patency of the fallopian tubes may be the deciding factor of the situation. At times, resection of the ovary may not only retain function but may even restore fertility, especially if complicating fibroids are removed, uterine malpositions are corrected, and all transplants are excised. Experience has shown, however, that conservative measures are often unsuccessful from a symptomatic standpoint. When the ovaries and pelvic peritoneum are extensively damaged, hysterectomy and removal of the adnexa are demanded to effect a cure. Myomectomy for uterine endometriosis (adenomyoma) is often feasible, for the growths are usually single and rarely of large size. Rectovaginal endometriosis, because of its invasion, may pursue a devastating course with resultant intestinal obstruction. Previous to the identification of this condition, bowel resection was the only resort; at present the recognition of the dependence of the lesion upon ovarian stimulation gives us the proper lead, and removal of the uterus and adnexa are followed by striking retrogressive changes and relief of symptoms. However, atrophied rectovaginal endometriosis has the same potentialities for malignant changes as has senile uterine endometrium or ovarian endometrial tissue. The treatment for discrete endometrial lesions of the round ligament, umbilicus, laparotomy scars, bladder and vagina, is excision; recurrences may depend upon the complicating pathology. Radium, although capable of causing ovarian atrophy, is rarely applicable because pain from the adhesions and fixation of the organs demands mechanical procedures to effect relief.

In conclusion, this problem of endometriosis presents much of practical interest to the gynecologist. If endometrium may be disseminated as a spill through the tube, the same holds true for cancerous endometrium and surgical technique must be modified in many important ways. Gentleness in palpating the uterus is necessary, especially if cancer is suspected. Curettage, particularly when done as form of *treatment* for leukorrhea, is not only illogical but may be actually dangerous. Even diagnostic curettage should be done only in doubtful cases and with great care. Uterine packing and radium applicators may act as a block and force normal or malignant endometrium through the tubes. The frequent occurrence of endometriosis after salpingectomy or salpingotomy (Sampson found thirty in thirty-six patients) suggests that the tube should be severed by the cautery and the stump should be buried in the uterine cornua without clamping or piercing it with sutures, and finally, in performing hysterectomy for fundal cancer, the least possible manipulation and the prompt closure of channels through which material may escape from the uterus offer the best chances of permanent cure. The fimbriated ends of the tubes should be ligated at once, the ovarian vessels, round ligaments and uterine vessels should be doubly ligated and cut between; and the vagina should be clamped below the cervix before removing the uterus.

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DISCUSSION

Robert Glenn Craig, M. D. (490 Post Street, San Francisco).—Dr. Alice Maxwell has given us an excellent presentation of this subject, placing the emphasis on the transplantation theory, which is probably true in the majority of the patients. On this basis she has given some excellent practical suggestions whereby we may lessen our own responsibility in causing the transplants at the time of operation.

Since Sampson's most careful and thorough work in 1921, we have had repeated articles from him emphasizing the transplantation theory and pointing out to us the frequency of this disease. The difficulty in explaining the extraperitoneal lesions have been

overcome by stating that the endometrium is transplanted through the lymphatics. Free endometrium in the fallopian tubes has been found and counted as strong evidence that this endometrium was on its way from the uterus to the ovary, although in all of these patients endometrium was already present in the ovary and might just as easily, if not with more ease, be going in the reverse direction. In addition, this has usually been found between menstruation and is not menstruating endometrium. The recent work with vital stains and tissue culture both point to the low viability of the endometrium at the time of menstruation, which adds another obstacle to this theory.

Undoubtedly operative procedures opening into the uterine cavity are not infrequently followed by endometrial growths as is evidenced by their postoperative occurrence at the uterine cornu and in the operative scar. It is imperative for us to remember this at the time of operation if we are going to prevent their occurrence. Dilatation of the cervix with Hegar dilators have always seemed dangerous in view of this theory, and for this reason I prefer Goodall dilators.

I am willing to accept this transplantation theory as an explanation in many patients, but from an etiological view, think some credence must still be given to misplaced Müllerian tissue or to hyperplasia of the endothelial tissue of the peritoneum—the "Serosal Theory of Iwanoff."

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JOHN C. IRWIN, M. D. (1709 West Eighth Street, Los Angeles).—In a short but thorough paper, Doctor Maxwell has given us a very lucid discussion of an important subject. If we accept Sampson's statement, that this lesion is found in 43 per cent of the women operated between the ages of thirty and fifty years, it becomes a matter of extreme importance to the pelvic surgeon. Indeed any lesion that is so common as these findings indicate, is little short of alarming.

Naturally Sampson, in doing research in this field, has carefully examined all cases for it. Personally, I have not found nearly so high an incidence as his. This divergence may be attributed to the fact that I have not made a careful search for the lesion in patients operated for other pathology.

The German and Austrian investigators seem firmly convinced that the condition is due to Müllerian embryonic rests. The finding of the lesion inside the ovary and in other organs where transplants would not have access causes them to cling to this theory. I believe, however, to most of us Sampson's transplant theory seems the more logical, especially when we consider that the migration may be through lymph and blood vessels.

In the light of our present knowledge I think we should accept Sampson's theory as to etiology, and observe the precautions, as outlined in this paper, tending to minimize the incidence of the lesion. To these precautions I would make an addition. In doing tubal insufflation with gas after the Rubin technique and injection of lipiodol for salpingography, one should wait at least five to seven days after the end of menstruation before carrying out the procedure. This would allow the uterus to expel all menstrual products from its cavity and thus minimize the danger of forcing such products into the peritoneal cavity.

The points of surgical technique enumerated are particularly instructive and reasonable. The complete ablation of the internal genitals in extensive endometriosis, involving rectum or bladder and other important organs, is certainly to be recommended. Since the ovary is the periodic activator of the growth, its removal should and does cause the desired regressive change. Therefore, the ovary must be sacrificed even in young individuals at times, when the growth involves important structures in an invasive and destructive manner.

PNEUMONIA IN CHILDREN*

WITH COMMENTS ON THREE HUNDRED AND SEVENTY-FIVE CASES

By E. EARL MOODY, M. D.
Los Angeles

DISCUSSION *by S. J. McClendon, M. D., San Diego; Edward S. Babcock, M. D., Sacramento; Phillip E. Rothman, M. D., Los Angeles.*

IT may be said that a review of a series of cases such as contemplated is needless in view of the great amount of data already accumulated regarding such an old disease as pneumonia. Yet it has occurred to the writer that such a review will be of value to the pediatrist as well as to the general practitioner. It is of great value to all of us to take stock in trade from time to time and by doing so get a new perspective. In our daily practice we see a case of pneumonia which is more or less properly diagnosed, and with more or less indefinite treatment it gets well either with or without a complication. Or it reaches a fatal ending and so becomes just another case history. It is only by assembling the data from a large series of cases that we are able to get a refreshed picture or possibly a new picture of the disease. So with this thought the writer undertook the task of analyzing some three hundred and seventy-five cases of pneumonia in children at the Los Angeles General Hospital.

The pneumonia service at this hospital is probably one of the largest, if not the largest, of such services on the Pacific Coast. Because of peculiarities of population, character of climate and method of hospitalization, some very interesting data have been accumulated. New methods of treatment or new scientific data did not come within the scope of this paper.

THE MEXICAN POPULATION OF LOS ANGELES

Los Angeles has the second largest Mexican population of any city in the world, being exceeded only by Mexico City. There is also a very large Mexican population in the county which further swells the number this hospital serves. It was the good fortune of the writer to have spent a year in housing work under the Los Angeles Housing Commission before he studied medicine. Here was gained first-hand information concerning the insanitary methods of living of these people. There are few robust individuals among them. They eat improper and insufficient food. They live under the most crowded conditions, often two or three families crowding into two or three rooms in spite of the vigorous objections of the health authorities. Ventilation and fresh air are things they shun. They reproduce their kind unto a point of exhaustion of the mother. The children are raised among filth and dirt, being most intimately acquainted with flies.

* A review of three hundred and seventy-five pneumonia cases at the Los Angeles General Hospital, Unit One, for the year July 1928 to July 1929.

* Read before the Pediatric Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

Under such conditions it is impossible to raise children with any degree of resistance against disease. They, as a race, seem to have an inherent fear of hospitals and only are such institutions utilized when death is near at hand. These facts make the complexion of the data somewhat different from similar compilations in other parts of the country.

CLIMATE IN SOUTHERN CALIFORNIA

It has been advertised far and wide that the climate of Southern California is such that disease tends to be of a less severe nature than in other communities less favorably situated. I have lived and practiced my profession for quite a number of years in Los Angeles and I have been under the impression that diseases of a respiratory character were of a much less severe nature here than in other parts of the country. Yet when I am faced with the facts of this review I fear that I have been laboring somewhat under a delusion.

FACILITIES FOR CARE AT THE LOS ANGELES COUNTY GENERAL HOSPITAL

I consider the facilities at the Los Angeles General Hospital, Unit One, for housing of pneumonia cases in children as near ideal as is possible to find in any general public hospital. Quarters are furnished in the contagious building, where wards are large, airy, filled with sunshine, and never overcrowded. With the unit system of nursing and care thrown around each patient, cross infections are very rare indeed. I consider the nursing care in this building to be the best of the entire hospital. Ample space is provided for open-air treatment of the lobar cases and for sunshine and air during convalescence.

The period of time under review saw a mild epidemic of influenza and may have changed somewhat the situation from other years. However, it seemed from experiences of other years on this service, without having the data at hand for comparison, that the disease in question ran similar to other years except for an increase in a number of cases.

LOBAR AND BRONCHOPNEUMONIA CLASSIFICATIONS

For the purposes of this paper we have kept to the older, more familiar, classifications of lobar and broncho pneumonia. As yet no classification has been worked out that is satisfactory from all standpoints. A pathological differentiation is not fit for the bedside clinician except as it gives him a mental picture of the diseased condition that is going on in the patient whom he is diagnosing and treating. Bronchopneumonia is many times secondary to other infectious diseases, though many times it is a primary condition. After serving the pneumonia wards for a number of years and after studying these charts, I have almost reached the conclusion that all types of pneumonia are merely a part of a general respiratory infection. Red throats were almost the universal rule. Otitis media was so common as to be expected in nearly every case. The history of some sort of respiratory infection was found in almost 100 per cent of cases. The postmortem proved that many cases of diagnosed lobar pneumonia were of the broncho type and involved the whole lobe or multiple lobes. The only accurate classification is the pathological one which can only be made at postmortem. This, however, is of little value to the bedside practitioner of medicine in making his diagnosis. I am sure, however, that we will be understood when we classify our cases as lobar and bronchopneumonia.

Most of us pride ourselves on the fact that, after a certain amount of experience, we think we can tell to a fair degree of accuracy the condition in a child's chest during a course of pneumonia. Yet when we have our diagnosis checked by the court of last resort—the postmortem examination—how sadly disillusioned we frequently are. Even the x-ray fails us all too often. Crozer Griffith,[1] in a candid and eye-opening article, reported twenty-six cases of pneumonia which had been classified clinically, diagnosed by x-ray, and examined at autopsy and found that the triple diagnosis agreed in only six of the twenty-six cases. In the remaining twenty cases the clinical diagnosis was confirmed in only nine instances, the x-ray diagnosis in only six cases, and in five cases neither was correct.

EVALUATION OF DIAGNOSTIC PROCEDURES

A similar condition exists at the Los Angeles General Hospital. Eighteen of this series were studied in which a clinical diagnosis was made that was acceptable to the clinician. X-rays were made, and postmortem examinations completed the picture. In only five of these did the three agree. In the remaining thirteen cases the clinical diagnosis was confirmed in only seven cases. One case was diagnosed lobar pneumonia which at postmortem proved to be empyema, which had not been recognized at the bedside. In five cases the clinician said that there was no pneumonia, yet all these revealed a bronchopneumonia at autopsy. So we see that the clinical diagnosis agreed with the autopsy findings in only eleven of the eighteen cases.

The x-ray did not fare as well as did the clinician. In only the five cases mentioned above was the x-ray diagnosis correct. In one case the x-ray diagnosis was lobar pneumonia and the postmortem revealed an empyema, which case was likewise missed by the clinician. One case, diagnosed as lobar, proved to be bronchopneumonia. In eleven cases the x-ray reported no pneumonia. However, in fairness to the radiologist, it should be stated in four of these cases the picture was taken longer than forty-eight hours preceding death. In all of these missed cases the bronchopneumonia was an early one. From these figures I think we can conclude with Griffith that the accurate diagnosis of a condition in the chest is still a very difficult one in many cases. Also that the x-ray is not the last word in diagnosis, and that in the early case the clinical picture and course gives the most accurate estimate of the condition.

TABLE 1.—*Analysis and Comparison of Cases*

	Griffith	L. A. General
Diagnosis of pneumonia, clinical, x-ray, autopsy	26	18
Clinical and x-ray diagnosis agree	10	8
Of these both diagnosis incorrect	4	4
Clinical and x-ray diagnosis disagree	16	10
Of these clinical diagnosis correct	9	8
X-ray diagnosis correct	6	1
Both incorrect	1	0
Cases in which differences of the three methods existed	20	13
Clinical diagnosis correct	9	7
X-ray diagnosis correct	6	1
Neither correct	5	4

TABLE 2.—*Comparison of Age Groups*

	Lobar		Bronchopneumonia	
	Morgan	L. A. General Hospital	Morgan	L. A. General Hospital
Total of all cases	379	114	205	265
Under six months	.....	1.7%	.....	23%
Under one year	16%	6.9%	47%	44%
One to two years	19%	14%	24%	14%
Under three years	47%	34%	79%	79%

ANALYSIS OF CASES UNDER REVIEW

Sex.—During the period of review there were 375 cases of pneumonia in children at the Los Angeles General Hospital, 195 males and 180 females.

Season.—These cases, as was to be expected, were scattered throughout the year, by far the greatest number in winter and the least in summer. The influenza was at its worst during October, November and December, yet January, February and March showed more pneumonia than did the influenza months.

Lobar and Bronchopneumonia.—If we can rely on our diagnosis, there were 114 cases of lobar pneumonia as against 261 of the broncho type, or a ratio of 1 to 2:28. If we refer to Griffith's article again, we find he states that the differential diagnosis between broncho and lobar pneumonia is too often dependent on the view of the individual examiner. He quotes from seven different observers who report a total of 2679 cases in which the ratio between lobar and bronchopneumonia varies between 1 to 0:31 and 1 to 6:00. Therefore, keeping in mind these figures and those quoted above in which the diagnosis was proved by autopsy, I cannot be brave enough to tell you our ratio is a fair proportion between these two types of pneumonia for the Los Angeles district.

Age Periods.—The segregation of the cases into age groups is interesting. The average age of all patients was forty-seven months. The average of the lobar patients was six years. The youngest lobar patient was twenty-one days, as proved by autopsy. In this type of disease 6.9 per cent were one year or under. Fourteen per cent occurred during the second year. It is quite possible that a goodly number of this last age group diagnosed as lobar pneumonia were bronchopneumonia. Thirty-four per cent of all lobar pneumonias were three years of age. Morgan,[2] in reporting 398 cases of lobar pneumonia from Toronto, said that 16 per cent of his patients were under one year of age and that 19 per cent were between one and two years, while 47 per cent of his cases were under three years of age.

In checking the age of the bronchopneumonia patients, we find that 44 per cent were under one year with 23 per cent of the total number being six months or less. Fourteen per cent were one to two years of age. This was the exact percentage of the lobar pneumonias of this age group. Seventy-nine per cent of all our bronchopneumonia patients were under three years of age. Comparing Morgan's [3] figures again with a report of 205 cases of bronchopneumonia, we find 47 per cent of his patients were under one year of age, as against 44 per cent in our series. His figures for the second year were 24 per cent, as against 14 per cent in our figures. Totaling all his patients under three years of age, we find it to be exactly the same as ours, namely, 79 per cent.

Race and Nationality.—It is interesting to note that the Mexicans of Los Angeles County furnish 59 per cent, or 212, of the total number of cases. Whites furnish 34 per cent, negroes 5 per cent, and all others 2 per cent.

Illness Prior to Admission.—The little patients were sick at home for an average of five days before they entered the hospital. Their average stay in the hospital was eighteen days.

COMPLICATIONS

Otitis Media.—Of the complications, otitis media was the most common, occurring in 128 cases, or 34 per cent. Thirty-two per cent of all bronchopneumonias, or eighty-four cases, showed purulent ears, and 38 per cent, or in all forty-four, of the lobar pneumonias presented the same condition. There were twenty-four cases of empyema or an incidence of 6.4 per cent.

Pertussis and Other Diseases.—In the secondary cases of pneumonia, pertussis was the most common primary condition, being found in forty-four patients. If an accurate diagnosis of influenza could have been made and this finding recorded on the chart, there is no doubt but that this would have been the most common primary condition. Diphtheria accounted for nine cases, tuberculosis for six cases, scarlet fever for five cases, malnutrition for four cases, and premature birth for three cases. In the series nearly every one of the common diseases of childhood could be mentioned as a primary cause of bronchopneumonia.

However, there were many cases of bronchopneumonia which could not be attributed to any primary condition.

Empyema.—The empyema patients were transferred to the empyema service and did not come under this department for treatment. It is worth while to give a few facts gleaned from the review of these twenty-four cases. The average hospital stay was forty-seven days, the longest being one hundred and twenty days, and the shortest sixteen days. It was the fifteenth day of stay in the

hospital before the average case was diagnosed. One case was not diagnosed either by the clinician or the radiologist until autopsy.

In the beginning the treatment of these cases consisted of first aspiration, by which method only one patient recovered. The closed method drainage by use of the Mazingo tube and Carrell Dakin solution irrigations was next tried, and was used in eighteen patients. This treatment accounted for a cure in only five cases. Rib resection was done last and accounted for a cure in thirteen patients and seemed to offer the best treatment after the abscess had become well walled off. The charts indicate that the patients did better after free drainage was instituted. However, the small number of deaths may be attributed to the late rib resection, thereby allowing firm adhesions to be formed before the chest was opened. There were only three deaths, or a rate of 12.5 per cent. One of these three patients was evidently foredoomed to die because he developed, during his stay in the hospital, diphtheria, hemorrhagic nephritis, and purulent pericarditis. It is possible that, if a second of these three patients had been recognized and treated, it might have been saved. This death rate will compare very favorably with the very low figure of 11 per cent reported in a series of thirty-four cases of empyema from the St. Louis Children's Hospital.[4] It must be remembered that the treatment of an empyema is never an emergency, and if routine rib resection is the usual treatment, a delayed diagnosis has probably saved a good many lives. We note above that the fifteenth day was the average day of diagnosis. Six days later was the average day of inserting the Mazingo tube. It was not until the average of the thirty-ninth day that a rib resection was done. The patients were entirely healed at the average of the thirty-ninth day after operation.

Urinalysis and Blood Count.—We found that 3.6 per cent of the total pneumonia patients ran sugar in the urine at some time during their acute illness. These all cleared up before the patients reached their convalescence. The presence of sugar in these patients is not explained. In the pertussis pneumonias the blood counts ran unusually high. It was not uncommon to have a white count as high as 135,000 with 75 per cent lymphocytes. The average count in the pertussis pneumonias was 33,250 with 66 per cent lymphocytes. This is very close to the average reported by Morgan,[5] namely, 32,500 with 53 per cent lymphocytes.

Tuberculin.—The Mantoux tuberculin test was used routinely in all cases and was positive in six per cent. These figures cannot be claimed as accurate because the interns often failed to record on the charts the results of the test. We assumed that where the test was done and the result not recorded, the test was negative.

RESULTS

The interesting part for the patients in any series, is how many get well. Unfortunately all too few of our patients had this happy outcome. There were 112 deaths in this series, or a death rate of 29.8 per cent. If we deduct the sixty-six noninstitutional deaths (those patients dying within forty-eight hours after entry into the hospital) there are left forty-six institutional deaths, or a corrected rate of 14.8 per cent. The noninstitutional deaths were 59 per cent of the total deaths. There were eleven deaths in the 112 cases of lobar pneumonia. This is a rate of 9.6 per cent. There were 101 deaths among the bronchopneumonias, which gives a rate of 38.7 per cent. There were fifty-nine noninstitutional deaths in this type, and if these were deducted it gives us a corrected rate of 20.8 per cent.

Comparison of the death rate figures can never be very accurate under our present criterion of diagnosis. Disparity of figures can be accounted for in several ways, namely, various age groups, error in diagnosis, and variety in virulence of the infecting organism. Morgan,[6] in his report of 398 cases of lobar pneumonia, reported a death rate of 9.3 per cent for all ages. He gives Holt's figures as a rate of 4 per cent for all ages. The Chicago Pneumonia Commission reported in 1924 a rate of 7.6 per cent for all children under four years of age. If we include all the deaths from lobar pneumonia at the Los Angeles General Hospital, Unit One, we find the rate is practically the same as Morgan's, namely, 9.6 per cent. If we use only the institutional deaths in our figures the rate is less than that of Holt's, namely, 3.7 per cent.

We see a wider range of disparity in the bronchopneumonia cases. Morgan[7] reported 205 patients with a death rate of 57 per cent. He reported Holt's figures as 461 cases with a rate of 65.5 per cent. Morrill with 325 cases with a rate of 48 per cent, and Pisek and Pease with 451 cases with a rate of 41 per cent. The Chicago Commission reported a rate of 23.4 per cent in children under four years of age. If we accept all the deaths occurring at the Los Angeles Gen-

TABLE 3.—*Comparison of Death Rates*

1.—Lobar Pneumonia

	Morgan	Holt	Chicago Commission	L. A. General Hospital
Number of patients	398	.....	.....	114
Rate	9.3%	4%	7.6%	9.6% all cases 3.7% institutional cases only

2.—Bronchopneumonia

	Morgan	Holt	Chicago Commission	Morrill	Pisek and Pease	L. A. General Hospital
Number of patients	205	461	.....	325	415	261
Rate	57%	65.5%	23.4%	48.3%	41%	38.7% all cases 20.8% institutional cases only

eral Hospital, Unit One, we have a rate of 38.7 per cent. If we exclude the noninstitutional deaths, we have a corrected rate of 20.8 per cent.

In pneumonia, secondary to pertussis, we had a death rate of 50 per cent. In Holt's figures for such cases we see a rate of 81.8 per cent. Other reports run as low as 45 per cent. An illuminating fact concerning the severity of pertussis in young children is that the average age of these unfortunate children who died was 7.4 months, the oldest being eighteen months and the youngest one month.

Seventy-five per cent of all the deaths occurred in Mexican children. We will recall that only 59 per cent of the total cases of pneumonia were Mexicans. The white race furnished only 18.7 per cent of the total deaths, and the negroes 6.2 per cent. Another astonishing fact is that 80 per cent of the noninstitutional deaths were found among the Mexicans. You can now see the significance of my earlier remarks concerning the Mexican population and its contribution to the complexion of this review. It is because of this Mexican population that I feel justified in deducting the noninstitutional deaths from my compilation, for in doing so I felt that it would give a fairer idea of what pneumonia really is in the southern portion of the state. The astonishing high death rate among the Mexicans, both in and out of the hospital, I feel is a direct result of their heredity, environment, and the almost complete lack of care for their sick children until death is about to overtake them.

Postmortem examinations were obtained on 47 per cent of our patients who died. If there had been a higher average obtained it is possible that the whole complexion of our figures might have been altered. An explanation might be in order as to why not more than eighteen cases appear in the study reported above. It was the routine order to have an x-ray taken of all pneumonia patients for diagnosis and a final one before discharge of the patient. In those patients dying a few hours after entry to the hospital it was not expedient to obtain x-ray pictures. Films were obtained in 279 of the cases.

No effort was made to type any of the cases of lobar pneumonia. Because of the low death rate, I believe it is not the general procedure to do so in most cases of pneumonia in children. The difficulty in obtaining the sputum is the greatest drawback to such a procedure. Then again the laboratory work entailed would throw another burden on an already overworked force.

TREATMENT

No new or experimental type of treatment was used in this series of cases. Our treatment was entirely symptomatic. A great deal of emphasis was placed on sufficient intake of fluids. Oxygen was used frequently in severe dyspnea with cyanosis. This was delivered through the nasal catheter. Stimulants were not routinely ordered. Caffein was the stimulant most commonly used, with whisky playing a close second. Digitalis was not used routinely, and was reserved only for those cases showing a decompensating heart. It had not been the custom until this last winter to put the lobar cases out of doors. Due to the great number of patients last winter, we were forced to put an awning over the sun porch. Our lobar cases were then moved out in the open air. It was surprising to see how rapidly these patients became more comfortable. Sleep was more restful. Breathing was not so labored. I could not see that it shortened the disease any or that the temperature range was lower. But certainly the comfort of the patients was increased and this factor must be an aid in recovery.

CONCLUSIONS

If there are any conclusions to be drawn from what has been here presented, let us note:

1. It pays to give good care to children in building up their resistance against infections with proper hygiene, good food, and proper inheritance.

2. Early hospitalization will lower the death rate to a marked degree.

3. The death rate in pneumonia in children is probably slightly lower here than in other sections of the country with a less favorable climate.

4. An accurate diagnosis in pneumonia, even with the aid of the x-ray, is still a difficult and uncertain procedure.

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DISCUSSION

S. J. McLendon, M. D. (2001 Fourth Street, San Diego).—Statistical papers are always of interest, particularly if they bring out facts which may be of practical importance in our daily work. Doctor Moody's paper presents in a very convincing manner the fact that pneumonia is prevalent in southern California. Another striking feature brought out by his statistics, which is confirmed by our smaller series at the San Diego County Hospital, is the high percentage of mortality from pneumonia among Mexican children. In a series of fifty cases of pneumonia in children, forty patients, or 80 per cent of the patients, were Mexicans, and of the eighteen deaths (35 per cent) in our series, all were among the Mexican children. This study should show us that diet, hygiene, and sanitation have something to do with the development of pneumonia and the course of the disease, although ignorance of the value of early intervention plays its part.

I am glad that Doctor Moody has pointed out the necessity for early hospitalization and has not tried to stress any new treatment of the disease. I am also glad that he has presented the point of difficulty in diagnosis of the particular lesion, even with the aid of the x-ray.

I wish Doctor Moody would tell us, if he has the statistics available, what percentage of cases were treated with antipneumococcic serum and whether or not it had any favorable action on the course of the disease.

EDWARD S. BABCOCK, M. D. (1127 Eleventh Street, Sacramento).—In a relatively small series of fifty consecutive, hospitalized cases of pneumonia seen in private practice in Sacramento, some rather interesting data were obtained. Sixty per cent were diagnosed bronchopneumonia. In this group, 26.6 per cent were under one year; 46.6 per cent were under three years; 40 per cent had otitis media; 6.6 per cent had empyema; 63.3 per cent had some degree of abdominal distention; 6.6 per cent died. Of the total fifty patients, 40 per cent were diagnosed lobar pneumonia. Of this group, 10 per cent were under one year; 40 per cent were under three years; 30 per cent had otitis media; none had empyema; 55 per cent had abdominal distention; and 5 per cent died. The percentage of patients, with abdominal distention is mentioned because it is frequently one of the early symptoms of pneumonia and has often helped me to make a diagnosis.

These figures compare fairly well with those Doctor Moody has given us except in two respects. First, the lower percentage of cases of bronchopneumonia under three years in the private practice group, and secondly, the lower death rate in this group than in the county hospital group.

Of course, a larger series or one extending over a number of years, including an influenza epidemic, would probably give a higher death rate. However, since diseases such as rickets, malnutrition, and anemia are much more common among the poorer classes, the death rate found in county hospitals should be much higher than that in private institutions.

I often wonder how many pneumonia patients die from overtreatment and whether our death rates would not be lower if our treatment consisted of only absolute rest, careful nursing, and forced fluids (parenterally given if necessary) and less inhalations, mustard plasters, medication, and handling. Of this series of fifty patients none were given any cathartic; twenty-four received no medication of any kind; thirteen received phenobarbital for restlessness; twenty were given diathermy chiefly for relaxation and abdominal distention.

The x-ray findings in pneumonia are most interesting, especially when we consider the newer theories of the causation of some types of pneumonia and the rapidly changing pathology in the chest. Frequently lobar pneumonia is diagnosed from the film a day or two before physical signs of consolidation can be made out and, again, the reverse is true. If repeated films were taken I do not believe there would be such wide variations in the comparative findings between x-ray and physical signs.

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PHILLIP E. ROTHMAN, M. D. (925 Pacific Mutual Building, Los Angeles).—For a great many years pediatricians have been interested in the clinical differentiation between lobar and bronchopneumonia. The problem is not simply one of scientific interest, but its solution will be of the greatest help in aiding us to make a reasonably accurate prognosis in any case of pneumonia. Statistics such as Doctor Moody and others have collected show very definitely that lobar pneumonia in childhood is a relatively benign disease carrying a mortality of only 5 to 10 per cent. Bronchopneumonia, on the other hand, has a very high mortality, and according to most observers it is over 50 per cent. This type is also characterized by serious and often permanent sequelae, whereas lobar pneumonia tends to resolve completely without any lasting damage. Contrary to prevailing views, lobar pneumonia is by no means a rarity under two years of age, but of course occurs less frequently than bronchopneumonia. During this age period the mortality in both types is higher, but that of lobar, according to McNeil, is trifling (only 14 per cent), contrasted to bronchopneumonia, which is over 60 per cent. The confusion is due to the fact that scattered areas of consolidation in both lungs may, on histological examination, prove to be a croupous pneumonia, whereas a localized area confined to a portion of one lung and producing a homogeneous shadow in the x-ray may show at autopsy the characteristics of bronchopneumonia. Our total fund of information derived from the history, clinical course, physical findings and x-ray pictures is still insufficient to enable us to accurately differentiate the two forms in many cases. This was emphasized particularly by Griffith in the article mentioned by Doctor Moody. The prognostic value of the statistics will be helpful only after we have more exact methods at our disposal for the diagnosis of the various types of pneumonia.

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DOCTOR MOODY (Closing).—In reply to Doctor McClendon, would state that we did not use any antipneumococcic serum in this series of cases. No attempt was made to type any of the patients, and we felt that the use of the serum without typing would be of little value. No specific treatment was tried on any of the patients.

We quite agree with Doctor Babcock that often too much treatment is given to pneumonia patients. Symptomatic treatment with good nursing was the only method pursued on our service, and we feel that the results justify this procedure. I do believe that if more frequently x-ray pictures were taken perhaps there would be fewer disagreements in diagnosis than do now exist. It is questionable whether this better diagnosis, in view of our limited means of treatment, would help the condition of the patient much or improve his chances of recovery.

We all feel, with Doctor Rothman, that a more accurate method of diagnosis of the types of pneumonia is needed. Perhaps some day, through closer study of our cases, this method will be worked out.

CHOLECYSTECTOMY—NEW METHODS IN ITS TECHNIQUE*

By STANLEY H. MENTZER, M. D.
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DURING the past thirty years the mortality from cholecystectomy has decreased from 30 to less than 6 per cent in most of the large clinics in this country. This decrease may be ascribed to several reasons, the major one being, probably, earlier operative intervention. In addition, the cases for surgery have been selected more carefully, the pre- and postoperative treatment has been improved, and changes in the technique of cholecystectomy have been made. Although improvements in technique account for a relatively small percentage of the mortality decrease in biliary surgery, nevertheless, they represent an important contribution. It would seem that the methods of surgically attacking the gall bladder have become fairly well standardized, and yet it is probably true that there can be no standardization in surgery. Even during the last two years, changes have been made in the methods of handling patients with gall-bladder disease. It is for this reason that the writer is presenting his methods that are now in use at the University of California Medical School.

PREOPERATIVE DIAGNOSIS

If we review for a moment the improvements in our methods of handling patients with gall-

* From the department of surgery, University of California Medical School, San Francisco.
* Presented at the Nevada State Medical Association meeting, Reno, Nevada, September 26, 1930.

bladder disease, we should consider first, it seems to me, the preoperative diagnosis. This includes not only the diagnosis itself but the selection of cases and the methods that shall be used for each individual patient.

In the diagnosis of biliary disease, the clinical history is the most important single factor. It must be carefully and accurately taken and the physician should not be a scribe in its taking. He should carefully evaluate the various factors presented by the patient and analyze them critically. Medical students are constantly making the mistake of accepting the impressions of the patient as facts, and this, of course, has led to many errors. The relation of pain to food, its duration and time of appearance, the type of distress, its localization and radiation and the manner of relief are important. Gas in the form of belching or flatulence must be carefully interpreted. Qualitative food distress seems to present the greatest difficulty. Biliary colic is fairly easy to recognize and does not enter so much into our diagnostic problem.

One of the problems of today in the diagnosis of gall-bladder disease is the Graham-Cole x-ray. It is undoubtedly of great value and it probably has increased the accuracy of gall-bladder diagnosis 25 per cent. However, it is responsible for a good many errors, especially in instances in which the x-ray depicts gall-bladder disease when later operative or autopsy work demonstrates that there is no pathology in the gall bladder. In a series of one thousand cases of cholesterosis of the gall bladder which Judd and the writer studied, the roentgenologist diagnosed gall stones in eight per cent of the patients in whom they were absent, and overlooked them in more than 35 per cent of the cases. Since that report in 1926, the roentgen diagnosis has improved considerably, but even during the last year errors have been unduly high.

PREOPERATIVE CARE

Few persons are able to pass through the strain of major abdominal surgical experiences without adequate preoperative preparation. We are expecting too much when we request the patient to enter the hospital the day of his operation. One or two days in bed at the hospital permits of psychic adjustments to one's surroundings, of body rest, and of means of securing an adequate quantity of body fluids and glucose. At the same time a careful physical examination is remade, usually by the intern, when the heart, lungs and kidneys are rechecked. In jaundiced patients liver function tests are of some value. If iodeikon is given intravenously for the Graham-Cole x-ray, it may be used at the same time as a liver function test. Although many patients with gall-bladder disease object to candy as a method of storing glucose, a pound of chocolate creams is usually urged on each patient the day before operation. Glucose may be given also in the form of sugar solutions, or in grapejuice, chocolate, or malted milk.

The danger of prolonged bleeding in jaundiced patients is still an experimental problem. The laboratory has not demonstrated a lack of either diffusible or nondiffusible calcium in the blood serum in patients that are jaundiced, no matter how high the icteric index. Clinical experience, however, has demonstrated the value of calcium salts in decreasing the bleeding time in these cases. Therefore, the writer still gives five cubic centimeters of ten per cent calcium chloride intravenously daily for three days before the operation as recommended by Walters.

A salt and soda enema is given the morning of the operation. The writer no longer uses a soap enema because of the proctatitis that is so frequently demonstrated at autopsy after its use. Three grains of amytal are given the night before operation, and five grains one and a half hours before operation. Amytal lessens emotional shock, aids the patient in securing a good night's rest, and is moreover an antidote for novocain poisoning. The type of anesthesia that is to be used is explained to the patient, for the writer has had the misfortune of starting an operation under spinal and have the patient vigorously object because he was not asleep while on the operating table. If the patient demurs against spinal anesthesia, I give avertin rectally in the patient's room about twenty minutes before the operation is scheduled. This anesthetic aids materially in performing upper abdominal surgery under nitrous oxide anesthesia. It has proved very satisfactory and the writer has had no serious complications following its use. Ether anesthesia is only rarely used because of the burden it inflicts upon the liver. This organ probably carries the major portion of the shock of any operative procedure and ether anesthesia increases that burden.

OPERATIVE PROCEDURE

Lumbar or spinal anesthesia is the method of choice. Its use has unquestionably lowered the mortality of biliary surgery. Two hundred and forty milligrams of neocain or three hundred milligrams of novocain crystals usually suffice for a two-hour anesthetic. It may be introduced into the third or fourth lumbar space. Six cubic centimeters of spinal fluid are withdrawn and the novocain crystals dissolved in it. When thoroughly mixed the novocain-spinal fluid mixture is gently injected into the subarachmoid space and the patient is immediately placed in a moderate Trendelenberg position.

An ampoule of three-fourths of a grain of ephedrin sulphate is administered subcutaneously fifteen minutes before the spinal anesthetic is given. Patients having a blood pressure of 110 or less, and patients in whom more than 200 milligrams of novocain are to be given are administered an additional ampoule of ephedrin one-half hour previously.

Morphin is not administered before the spinal anesthetic although it is sometimes given to patients who are unusually nervous during the course of the operative procedure. If nausea or

TABLE 1.—*Gall-Bladder Operations*

Pathologic Diagnosis	Number of cases	Chole-cys-tectomy	Cholecys-totomy	Average days in hospital	Mortality
Acute cholecystitis	0	0	0	0	....
Acute on chronic cholecystitis	4	4	....	13	....
Acute hydrops	6	5	1	14	....
Acute empyema	9	6	3	16	....
Acute gangrene	2	2	....	19	....
Perforation	4	2	2	18	....
Subacute cholecystitis	4	4	....	14	....
Cholesterosis	6	6	....	13	....
Cholesterosis with stones	8	8	....	14	....
Chronic cholecystitis	9	9	....	14	....
Chronic cholecystitis with stones	36	33	3	16	....
Totals	88	79	9		0

vomiting occurs, the administration of oxygen often relieves the patient. Oxygen plays a further part in that it allays psychic fear. A patient who finds the operating room atmosphere intolerable will often relax and sleep from the amytal, if oxygen has also been administered. Apparently the presence of an oxygen mask and the flow of gas is sufficient to relieve the mental tension.

One thousand cubic centimeters of normal salt solution or Hartmann's solution are given subcutaneously in the thighs almost routinely during the operative procedure. A gall-bladder elevator is not used, inasmuch as adequate exposure can be obtained without it. Its use seems to cause a considerable part of postoperative backache.

The incision may be one of several, the major requisite being adequate exposure. The high right rectus incision or the Mayo-Robson or Bevan modifications of it are satisfactory. The transverse Sloan incision has become deservedly popular. I prefer the Judd modification of the Kocher incision which begins at the ensiform cartilage and extends laterally a distance of twenty centimeters or so parallel to and about an inch below the costal margin. The muscle fibers of the rectus are split but if necessary can be sectioned without fear of postoperative herniation. A thorough exploration of the abdomen is then made.

If it is determined that cholecystectomy is advisable, the round ligament of the liver is severed between clamps and the Mentzer self-retaining abdominal retractor is inserted into the wound. This instrument was devised for gall-bladder surgery and probably finds its greatest use in this region, but it has proven of great value in pelvic surgery and other abdominal surgery, as well as in kidney work and in posterior resections of the rectum. It promises to be an aid in lung surgery. It eliminates the use of the first assistant's hands for retraction and maintains constant adequate exposure without the use of retractors in the hands of the second assistant. The round ligament of the liver is used for traction to evert the undersurface of the liver. It is secured in the fixed clamp on the retractor. The two small blades of the instrument are inserted against the liver on each side of the gall bladder. The intestines are packed off and retractors placed against the transverse colon, the stomach and lateral abdominal wall. When the retractor is extended, good exposure is obtained, provided, of course, adhesions have been previously freed. Patients have vomited and struggled on the operating table and yet the exposure maintained by this instrument has not been disturbed. Moreover, after exposure is once effected, no further trauma is inflicted to the tissues by changes in retracting hands due to fatigue or alterations in position of retracting instruments.

If no self-retaining retractor is available, exposure is effected by an assistant. This is one of the most difficult yet important steps in biliary surgery, and trained assistants are necessary for satisfactory exposure.

The next step is accurate identification and isolation of the cystic duct and artery. Many of the catastrophies of gall-bladder surgery are due to failure to heed this necessity. Flint has shown how frequently anomalous ducts and arteries occur and I have found anomalous ducts alone in ten per cent of bodies at necropsy. The duct and artery should, if possible, be ligated separately because of the danger that mass ligation affords for sloughing. Two separate ties of chromic number two catgut are applied to both the cystic duct and artery.

The dissection of the gall-bladder is carried out from below upward in most instances. The writer believes it is superior to removing the gall-bladder from above downwards, for one is less likely to sever anomalous ducts, especially those leading from the right hepatic duct into the cystic duct or into the side of the gall-bladder. Preservation of the liver bed is effected by injecting normal salt solution between the peritoneum and wall of the gall bladder in the liver fossa. The local edema thus produced permits of easy and accurate separation of the gall-bladder from the liver and allows a peritoneal flap of one or more centimeters which may be sutured together to cover the exposed liver tissue.

Drains are avoided as much as possible. In about 15 per cent of the cases a small rubber

dam or a Penrose drain with the gauze removed is inserted into the liver fossa and led out of the abdominal wall through a lateral stabwound. Stab-wound drainage lessens the danger of wound contamination. Drainage is not necessary if the ducts have been carefully isolated and identified, and if the hepatocystic ducts in the liver bed have been tied. Of course, if the gall-bladder is acutely infected or bile has exuded during the operation drainage is indicated.

POSTOPERATIVE TREATMENT

In the postoperative care of the patient nothing is given by mouth for at least forty-eight hours. A ten per cent solution of glucose in one per cent salt is given intravenously twice a day and normal salt subcutaneously so that the patient receives at least 3000 cubic centimeters daily for the first two days after operation. Fluids are then started orally and the patient is maintained on a fluid diet for one or possibly two days. Soft foods are given for the next week.

Flatulence is controlled by glycerin suppositories and a rectal tube. Enemas and flushes are avoided as much as possible. A large electric bake or turpentine stupe help a great deal and pituitrin is given when necessary. Fluid is not given by rectum unless it be salt solution, which is well absorbed, for it has been recently shown that glucose is not absorbed from the rectum. Fluids given by rectum stimulate reverse peristalsis and, therefore, increase flatulence.

This regimen has been most satisfactory and in this series eighty-eight consecutive gall-bladder operations are presented without a death (Table 1). Some of these patients entered the San Francisco Hospital with well-advanced lesions. There were four perforations, two gangrenes, and nine acute empyemas of the gall-bladder in this relatively small total series. The absence of operative mortality cannot continue, of course, but if it should remain low it would seem that our present methods are worthy.

450 Sutter Street.

FRACTURE DISLOCATIONS OF THE LOWER CERVICAL SPINE*

REPORT OF CASES

By H. W. SPIERS, M. D.
Los Angeles

DISCUSSION *by N. Austin Cary, M. D., Oakland; E. W. Cleary, M. D., San Francisco.*

THE progress of surgery in fractures and dislocations of the spine has lagged somewhat behind that of the extremities. Not so long ago a fracture of the spine was universally of grave import. If there were no cord symptoms it was good fortune; if there were no nerve root complications it was still better fortune, but the surgeon rather expected a high degree of impaired function and prepared the patient and his friends for a lifetime of at least partial disability.

PRINCIPLES OF REDUCTION SAME FOR FRACTURE OF SPINE AND EXTREMITIES

Accurate reduction of a fracture or dislocation of an injured extremity has become axiomatic, but this does not seem to be the case in the spine. The fundamental principles of fracture surgery apply equally to the spine. As such, traction and countertraction, placement of the distal fragment in line with the proximal, and immobilization, till healing has taken place, are just as applicable in fracture surgery of the spine as elsewhere.

Davis and Dunlop[1,2] have pointed out similar methods for reduction and realignment of fractures of the lumbar spine. Recent articles by Langworthy[3] and Taylor,[4] have demonstrated successful procedures for handling the cervical spine. Simultaneously, a method has been used by the writer for reduction and care of cervical dislocations and fractures, which seems worthy of consideration in that it has several points of advantage to both the patient and to the surgeon.

Neurological surgeons are quite agreed that actual cord destruction cannot be cured. They are also agreed that the actual amount of destruction cannot be told by the symptoms which immediately follow the injury. They are not agreed as to the value of radical surgery immediately following cord and nerve root damage. The consensus of opinion of the most prominent authorities is, that laminectomy is rarely justified by its results. Such surgery will not enter this discussion, since it is my experience that it holds out very little to such patients.

RELIEF OF PRESSURE ON SPINAL CORD OBJECT OF TREATMENT

The object of treatment is to relieve cord or nerve root pressure, and to immobilize the parts. It is my feeling and experience that reposition and maintenance of the displaced bones or fragments offers by far the most hope in minimizing both the immediate and remote results. It would seem beyond dispute that the trauma and pressure due to angulation, or to the narrowing of the bony spinal and root canals, is best relieved by the normal reposition of the bones or fragments which cause the pressure.

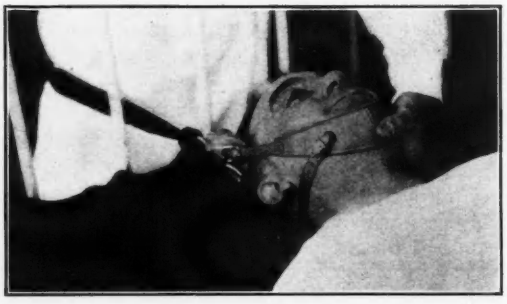

Fig. 1.—Sayre head sling in place with traction band about hips of operator.

* Read before the Industrial Medicine and Surgery Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

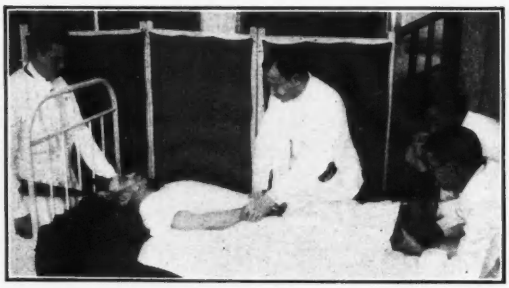

Fig. 2.—Traction and countertraction before manipulation.

A fracture dislocation of the cervical spine is most frequently caused by a fall on the head, flexing and twisting the cervical vertebrae violently beyond their normal range of motion. Little need be said of the mechanism of the injury. Any violence sufficient to lift even one articulating facet from the other causes considerable damage. It is my experience that the articulating facets are fractured more often than even the x-ray can demonstrate. This is reasonable when one considers the tremendous ligamentous support with which nature has provided the vertebrae.

The symptoms presented may be mild or grave, depending largely upon the amount of cord or nerve root damage. The more nearly the injury approaches the medulla the more serious the prognosis. Immediate death is frequent in injuries in the upper segment. Sensory and motor disturbances are wholly dependent on the amount of temporary or permanent damage to the cord or nerve roots. The symptoms vary from the gravest picture of total sensory and motor paralysis from the shoulders downward, to only a painful stiff neck or mild upper extremity neuritis. There can be no doubt of the diagnosis in the grave case, but in the less severe case only a roentgen-ray study will completely reveal it. Anteroposterior views are deceptive. Stereoscopic ones are but little better. Good lateral views are imperative and they are hard to get, particularly in the low cervical region.

All varieties of fractures and fracture dislocations may occur throughout the cervical segment. The atlas and axis, by their specialized shapes and functions, present many peculiar variations of damage. My clinical experience in this region has been limited, as few patients who sustain fracture dislocations in this area live for treatment. By far, the most frequent area in the cervical spine for such pathology to take place is that of the fifth, sixth, and seventh cervical vertebrae. Here, as one would expect, the greatest leverage takes place. The series that I will present later all took place in this region.

TREATMENT PROCEDURES

The method of treatment is simple in that the cardinal principles of reduction of fractures are followed. First, the patient, as soon as possible after the diagnosis is made, is anesthetized fully on a hard bed, the one in which he is going to remain. A pad is placed under the shoulders that the head may be manipulated and hyperextended without interference. Second, a head traction halter is placed on the head. This is attached at each side to a band running through the head of the bed and around the surgeon's hips. The surgeon, with his knees against the head of the bed, thus has powerful traction possibilities completely in his control and his hands are left wholly free. Assistants at the foot manipulate the patient's feet or arms for countertraction. Third, with the muscles completely relaxed by the anesthetic, a steady traction is begun. The surgeon, with his free hands can, if necessary, manipulate the vertebrae and head in any desired direction. Reduction is accomplished in the large majority of cases, without much traction and with moderate manipulation. I have tried to figure out in each patient just what manipulation is necessary to accomplish reduction with the least trauma. Theoretically, forward and lateral flexion of the head and neck away from the locked facet is correct. Practically, this does not always release the locked facet, a fact probably due to the impossibility of predetermining all the pathological factors present. A distinct snap, which often may be heard and, in my experience, always felt by the surgeon's hands, accompanies reduction.

A lateral x-ray film is at once taken at the bedside and developed. A point of advantage here, to both the surgeon and x-ray technician, is that the patient is relaxed and the head and shoulders are well separated. A good film is readily secured. If reduction is successful, the traction, already in place, is transferred to pulley weights. From five to six pounds is usually sufficient. Excess weight is unnecessary and adds to the patient's discomfort tremendously. Sandbags beside the head steady it and are helpful. The patient is left as he is for about three weeks, then a molded cast of the shoulders, neck, and head is made without in the least disturbing his position. This is immediately removed and a model made from it and a modified Thomas collar developed. The ordinary Thomas collar I have found not quite sufficient. It allows too much forward flexion of the head and neck. This has been overcome by carrying spring steel bands down the back to be attached to chest straps. The upright position, if not contraindicated by other disability

Fig. 3.—Traction applied. Manipulation of the neck by the operator's free hands.

factors, is now assumed. After a few weeks, physiotherapy is begun. The patient usually makes his maximum recovery in from four to six months.

The advantages of this method over others, advocated by recent textbooks and articles, seem to me about as follows:

1. The patient is treated in the bed in which he is going to remain permanently, almost as soon as seen, and the diagnosis made. Delay with increase of tissue damage if pressure exists, and the danger of loss of reduction by necessary change from table to bed, and careless handling, is obviated.

2. No cast is applied. The discomfort of such is considerable. Vomiting and retching in a neck cast after an emergency anesthetic has been given, with the patient usually unprepared, carries with it real possibilities of asphyxiation and pneumonia.

3. No specialized apparatus is necessary; everything needed can be secured almost anywhere. To apply a plaster neck and head cast which is at all satisfactory on a patient, requires much apparatus and expert knowledge of its use.

4. Reduction and immobilization is accomplished at the earliest possible moment, a fact that may mean immediate life-saving, as well as lessening the remote disability factors.

REPORT OF CASES

In a period of two years I have had seven cases. There have been three deaths—one the fourth day from respiratory paralysis with a completely crushed cord. One other, an insane patient, died in about four weeks after complete motor and sensory recovery. She took off her traction, fell out of bed and reproduced her lesion, dying shortly thereafter. The third lived many months, following a partial cord destruction, and died of bladder and kidney complications. The other four made complete anatomic and functional recoveries.

Case 1.—R. M. Age, forty-three. Admitted to Los Angeles General Hospital July 21, 1928. The previous day, he was thrown from a car to the pavement, striking on back of neck and on left shoulder. He had immediate severe pain in back of neck, but did not lose consciousness. He got up, but could not move his head because of pain and rigidity of neck muscles. On entrance to the hospital he complained of pain in both arms, particularly in the left, with numbness throughout it, and marked weakness in abduction and marked tenderness over region of fifth cervical vertebra. The biceps reflexes were absent with reduction in the left deltoid response. There was slight impairment of tactile sensations, but no cord symptoms.

X-ray examination showed anterior displacement of fifth cervical vertebra on the sixth, with locking of articular facets. A head traction with six pounds weight was applied for three days by the resident without improvement. When he was seen on the third day an anesthetic was immediately given and reduction accomplished by horizontal traction and manipulation. An x-ray following, showed complete reduction. Three weeks later, a plaster collar model was made, and the collar was applied ten days later and patient allowed to be up. With daily physiotherapy treatment to the left arm and shoulder, there was rapid improvement in the left deltoid action. The function of the forearm and hand improved slowly. Six months after the injury the collar was discontinued. The patient, seen one year after the accident, had returned to his work with 90 per cent, or better, of full function.

* * *

Case 2.—A. S. Age, thirty-four. Admitted to Los Angeles General Hospital August 20, 1928. This patient, who was insane, had on the previous day jumped from a moving car, striking on her head on the pavement. She was restless, noisy, and irrational, but there were no pathological reflexes with the exception of a suggestive Babinski. It was impossible to determine accurately motor or sensory involvement because of the patient's condition. It was evident that there was involvement of the nerve roots to the arms, but no cord symptoms.

The x-ray showed a forward displacement of the fifth cervical on the sixth, with locking of the articulating facets. The following day, under an anesthetic, reduction was accomplished by horizontal traction and manipulation. Continuous six-pound traction was applied. She progressed nicely for about three weeks. All sensory and motor disturbance seemed to have cleared up. During the night she removed her traction, got out of bed and was found on the floor. Examination showed she had a complete paralysis of the legs, absent knee-jerks, and positive bilateral Babinski reflexes. There were only slight motor responses in the upper extremities. Urinary retention was present. X-ray check-up demonstrated redislocation of the fifth cervical vertebra. She died at the end of the fourth week. Autopsy examination report stated hypostatic pneumonia with cord degeneration below region of the fifth cervical vertebra.

* * *

Case 3.—E. M. Age, forty-nine. Admitted to Los Angeles General Hospital October 7, 1928. He was in an auto accident the previous evening and remembered nothing of how he was injured. Examination showed an almost complete motor and sensory paralysis from the shoulders downward. Both arms could be abducted slightly; sensation was present over a limited area in the upper arms.

The x-ray showed an anterior luxation of the fifth cervical on the sixth, crushing of the superior articular facet, and lateral mass on the left side of the sixth cervical. On the second day an anesthetic was given and reduction accomplished by horizontal traction and manipulation; traction continued with six pounds weight. There was considerable return of motor and sensory function in the arms and a lesser amount in the lower extremities. There was bladder and bowel incontinence. At the end of about one month he began to fail and became irrational at times. He died at the end of the nineteenth week. The autopsy showed a terminal pleuropneumonia; also partial degeneration of the spinal cord from the level of the fourth cervical downward.

* * *

Case 4.—J. C. Age, sixteen. Referred by Dr. Elmer Anderson. Entered Hollywood Hospital November 1, 1928. He was injured in a football game about 3:30 p. m. and was seen at the hospital forty-five minutes later. He was rational. He stated that he immediately lost the use of his arms and legs following his accident. There was a complete flaccid paraplegic and complete anesthesia below the sixth cervical cord segment. Reflexes were absent.

The x-ray showed a forward dislocation of the fifth cervical with articulating facets interlocking. Under immediate ether anesthetic, reduction was accomplished in about ten minutes by horizontal traction and manipulation. Check-up x-ray showed complete reduction of dislocation, and head traction was continued with five pounds weight. The following morning the upper arms could be moved and sensations as far as the elbow were present. Three days later

he developed a sudden respiratory paralysis and died. The autopsy showed extensive cord necrosis in the region of the fifth cervical vertebra.

* * *

CASE 5.—C. S. Age, thity-six. Referred by Dr. William T. Cain. Admitted to Hermosa Hospital December 31, 1928. Injured in automobile accident December 28, 1928. The symptoms were: pain and rigidity in the neck, numbness in right index finger and thumb, weakness of entire right arm, and pain along outer border of right arm.

The x-ray showed a forward dislocation of fifth cervical on the sixth. Six days following the accident, under ether anesthesia, reduction was accomplished by horizontal traction and manipulation. Traction was continued till the end of the third week. when a collar was applied. At this time the arm and hand symptoms had completely disappeared. An x-ray showed callus along the anterior border of the fifth and sixth vertebral bodies. The collar was worn for four months and discarded. He has remained well, with full function to date.

* * *

CASE 6.—M. C. Age, thirty-four. Referred by Dr. Charles H. Peppers. She was injured the previous evening by falling against a dresser. There was immediate pain and muscle spasm in the neck and pain and numbness in the left arm and hand.

X-rays showed a forward dislocation of sixth cervical on the seventh, with comminuted fracture of anterior border of sixth cervical vertebra and fracture of spinous processes of sixth. Another surgeon attempted head traction and manipulation under anesthesia. X-ray check-up showed improvement, but not complete reduction. There was a slight improvement in arm sensations during next three days. On the fourth day, again under ether anesthesia, with horizontal traction and manipulation, reduction was accomplished. Check-up x-ray showed complete reduction. There was marked relief of arm symptoms the following day. Head traction was continued with decreasing weight for three weeks, when a collar was fitted and the patient was allowed to get up at the end of the fourth week. Six months following injury, the collar was discontinued and the patient returned to her former occupation without disability or symptoms.

* * *

CASE 7.—E. W. Age, fifty-eight. Referred by Dr. H. E. Peterson. Was seen at San Fernando Hospital September 11, 1929. Was in automobile collision the previous evening. His head was not hit, but was whipped forward violently. He had pain and numbness in right arm and hand, and pain and rigidity in the neck.

X-ray showed forward dislocation of fifth cervical vertebra on the sixth. Under anesthesia, with horizontal traction and manipulation, reduction was accomplished, as revealed by check-up x-rays. This was followed by head traction with five pounds weight and was continued for three and a half weeks, when a modified Thomas collar was fitted and patient was allowed up. Two months later, collar was still being worn and patient was still under treatment. No neuritis was present. He is now caring for his business and is apparently cured.

CONCLUSIONS

1. It would seem from this small series that fracture dislocations of the cervical spine can be reduced and reduction maintained by a simple method.

2. That the danger of the method is at least no greater than others, and has several points of increased safety and comfort.

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DISCUSSION

N. AUSTIN CARY, M. D. (2939 Summit Street, Oakland).—The method of applying traction in reducing fracture dislocations of the cervical spine is a valuable modification of methods which we have used and observed for a number of years.

I would like to emphasize the importance of a thorough knowledge of the mechanics of production and reduction of these injuries. This is essential before instituting traction on the cervical spine, as ill advised and purposeless manipulation will give some serious complications.

We prefer to immobilize these injuries immediately after manipulation in a quilted cotton collar instead of using leather or plaster of Paris. These collars are made by enclosing cotton of standard roll thickness between layers of plain rolled gauze, four to six inches in width and about five yards in length. This is then rolled into a bandage and successive layers are wrapped about the neck from below upward, building up a good support. These collars are then snugged up with an additional layer of gauze or outing-flannel bandage. They are comfortably worn and furnish adequate immobilization, and roentgenological check-ups can be made without their removal, a factor of considerable importance in injuries of this region.

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E. W. CLEARY, M. D. (490 Post Street, San Francisco).—Doctor Spiers' paper is a valuable contribution to the literature on treatment of fracture dislocations of the cervical spine. His method is simple, practical, and efficient. There seems little to add to what he has said.

At times I have found it expedient to put on a plaster collar under traction as soon as reduction is accomplished. This may prevent, in the case of an irresponsible patient, such an accident as occurred in the case of the insane woman who took off the traction and fell out of bed with a fatal result.

Doctor Spiers' method of applying traction during reduction by means of a bandage circling the surgeon's body, I think particularly clever. I shall use it in the future. I note that Doctor Spiers uses the chin-occiput bearing for traction application. I prefer the brow-occiput application, as I find it equally simple and effective and it has the advantage of leaving the jaw free for mastication.

*

DOCTOR SPIERS (Closing).—I wish to thank both Doctors Cary and Cleary for their discussion of this paper.

Regarding the quilted cotton collar method mentioned by Doctor Cary, I have been rather inclined to feel that one could hardly be certain of its efficiency. In a case where there is no tendency to recurrence of displacement, it would undoubtedly be more comfortable.

Doctor Cleary brought out the fact that the plaster cast might be more expedient in the irresponsible patient. I agree with him. My insane case with a fatal termination demonstrates this point well. I am glad the brow-occiput halter was mentioned. It has been my custom to alternate these halters from day to day. Neither, in my experience, is wholly comfortable.

COMPLEX RECTAL FISTULAE—THEIR OPERATIVE MANAGEMENT*

REPORT OF CASES

By DUDLEY SMITH, M. D.
San Francisco

CASES of fistula in ano that have been subjected to operation from one to several times without cure are not infrequent. This is usually due to one or more of the following causes:

1. Failure to find the internal opening.
2. Failure to follow all tracts to their termini and to open or excise them.
3. Faulty after-treatment.

Ordinary fistulae which are not too extensive ought to be cured by one operation if proper technique and postoperative care are employed. It is my opinion that the more complex fistulae ought also to be cured with one operation, unless more than one internal opening exists with tracts running above the external sphincter. These extensive complex fistulae frequently demand considerable boldness on the part of the operator in the matter of sacrifice of tissue, but if fundamental principles are kept in mind and proper technique used, successful results will follow. Stereoscopic x-ray films, taken after the tracts have been thoroughly injected with lipiodol and oil, give the surgeon accurate advance information concerning the tracts to be sought and the extent of the operation.

Preoperative preparation is of especial importance in cases which require extensive dissection. The colon should be thoroughly emptied and a strict nonresidue diet given to insure no passage of feces for at least one week after operation. This can usually be attained by the following regimen:

Three days before operation two ounces of castor oil is given. After this is given, a strict nonresidue diet consisting of fruit juices, sugar, sugar of milk, jello, gelatin, fruit jellies, candy, coffee, tea, and consomme, approximating three thousand calories a day, can be given without difficulty. Copious colonic irrigations of plain water are given morning and evening on the day following the purge and the morning of the day preceding operation. After the last irrigation the camphorated tincture of opium is given in two-dram doses at nine, twelve, three, and six o'clock. This insures a quiet, empty colon, and with a continuation of the nonresidue diet the patient can be carried along for a week or more after operation without defecation.

I prefer to operate under spinal anesthesia preceded by six grains of sodium amytal administered an hour before the anesthetic.

Before any incision is made the tracts are injected with saturated solution of methylene blue. To insure injection of all the tracts a careful technique must be followed. I have found a small canula attached to a Luer syringe best for the purpose. A small strand of gauze is wound around the canula and pressed down against the skin while the assistant draws the skin outward with two Allis or Kocher forceps, one on either side of the fistulous opening, thereby allowing pressure enough with the gauze to prevent backward leakage without obliterating the lumen of the tract, thus insuring easy and complete staining of the entire tract. Other external openings are closed by pressure with gauze while the injection is being made. If during the operation it is found that any side tracts are not properly stained, bismuth paste is used to inject them.

In these complex fistulae of long standing there is usually a large amount of indurated tissue, and I much prefer excision to incision. All masses of indurated, inflamed tissue and scar tissue are usually best removed, for this tissue frequently contains tracts that may be overlooked, and more rapid and complete healing is secured if only normal tissue is left.

The dissection is done with the electrocautery in all of my fistula cases. The cautery has several advantages over the knife and scissors. There is less bleeding, the tracts may be more easily followed, and if the fistulae happen to be tuberculous, healing will follow as kindly as in those due to simple infections.

The wound is packed with gauze at the time of operation, but when this is removed on the third or fourth day no more packing is inserted. The entire tract is painted out daily with hexylresorcinol or mercurochrome, and a vaselined applicator passed through the tract from the rectum to avoid bridging.

Finding the internal opening; thoroughness in the removal of all tracts; removal of sufficient superficial tissue and skin; and proper postoperative care; these will insure success.

REPORT OF CASES

CASE 1.—Miss D. O. Mexican woman, age twenty, with annular stricture of the rectum, one inch above the anorectal line; complex fistula in ano with eight external openings on the right buttock, one on the

Fig. 1. Fig. 2 Fig. 3

Miss D. O. Fig. 1—Before operation. Fig. 2—After operation. Fig. 3—After healing. No recurrence in two years.

* From the surgical department, University of California Medical School.

* Read before the American Proctologic Society at Buffalo, June 24, 1930.

Fig. 4 Fig. 5 Fig. 6

Miss L. P. Fig. 4 shows the tracts injected with lipiodol. Fig. 5 shows the condition three weeks after operation, and Fig. 6 shows the comparatively small amount of scar after complete healing. No recurrence after eighteen months.

left and one over the sacrococcygeal joint; there were two posterior internal openings at the anorectal line, one tract passing under and one tract over the external sphincter. The stricture was incised in three places with the electrocautery and later treated with carbon dioxid snow, and still later by diathermy. The fistula was excised with the electrocautery. Figs. 1, 2, and 3 show this case before and after operation and after complete healing. No recurrence in two years.

case, all of which was excised with the electrocautery. Fig. 5 was taken three weeks after operation, and Fig. 6 shows the comparatively small amount of scar after complete healing. No recurrence after eighteen months.

* * *

Case 3.—Mr. W. H. Age, forty. A tuberculous fistula in ano with extensive tuberculous skin lesion of both buttocks. Excision of fistulous tracts and skin with electrocautery. Complete healing. No recurrence after five years. Figs. 7, 8, and 9 show the condition before and after operation and after healing.

Fig. 7 Fig. 8 Fig. 9

Mr. W. H. Tuberculous fistula in ano with extensive tuberculous skin lesion of both buttocks. Figs. 7, 8, and 9 show the condition before and after operation and after complete healing. No recurrence after five years.

Case 2.—Miss L. P. Age, forty-three. A very extensive complex fistula in ano of twelve years' duration which had been operated upon elsewhere nine times. Fig. 4 shows the tracts injected with lipiodol. There were two external openings, one on either buttock, and one internal opening at the anorectal line, posterior. The tract on the left side ran up to the obturator foramen from which a side tract ran into the vagina; the tract on the right side ran up to the ramus of the pubes; a double tract ran from one external opening to the other, posterior to the anus. There was a great deal of dense scar tissue in this

* * *

Case 4.—Mr. W. N. Age, fifty-two. Extensive fistula in ano of twenty years' duration with several external openings on the right buttock and two on the left; there was one posterior internal opening at the anorectal line. Fig. 10 shows the condition after excision of the tracts with the electrocautery, and Fig. 11 the condition after complete healing. No recurrence in one year.

909 Hyde Street.

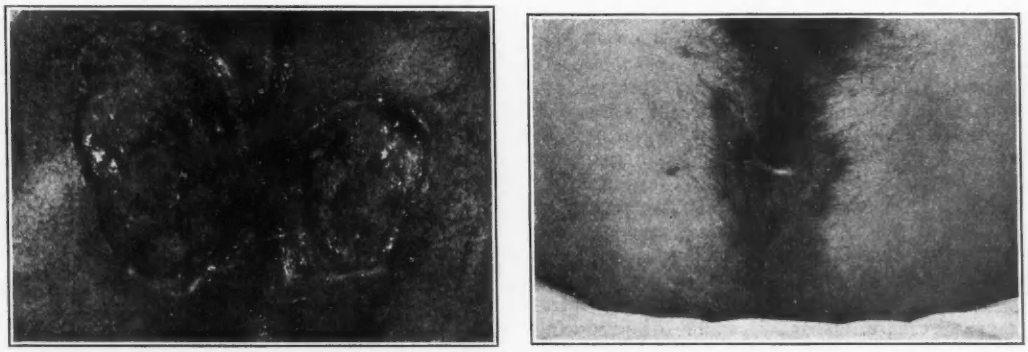

Fig. 10 Fig. 11

Mr. W. N. Extensive fistula with numerous external openings on both buttocks. Fig. 10 shows the condition after excision of the tracts. Fig. 11 shows complete healing. No recurrence in one year.

BRAIN LESIONS WITH HOMOLATERAL PHENOMENA OF PYRAMIDAL TRACT INVOLVEMENT*

REPORT OF CASES

By I. Leon Meyers, M. D.
Los Angeles

Discussion *by Thomas G. Inman, M. D., San Francisco; Samuel D. Ingham, M. D., Los Angeles.*

INTRACRANIAL lesions causing damage to a pyramidal tract frequently exhibit the phenomena resulting from the involvement of the tract, namely, the motor weakness, the spastic reflexes, the Babinski sign, and the loss of superficial reflexes, not as would be expected contralaterally, but homolaterally to the lesion. This occurs with especial frequency in lesions in the posterior fossa. The number of cases in this location, which regardless of their being situated above the crossing of the pyramids, show pyramidal tract phenomena homolaterally is, curiously enough, far greater than the number of cases which show these phenomena contralaterally to the lesion.

Thus Keschner and Grossman,[1] in a review of twenty-one cases of intracerebellar tumor with the pyramidal tract phenomena limited to one side, found these phenomena on the side of the lesion in sixteen patients and on the side opposite to the lesion in only five patients. Similarly, in eight cases of cerebellopontile angle tumor they found the pyramidal tract phenomena limited to the side of the lesion in six patients, and to the other side in only two patients.

Gould,[2] in a review of eighteen cases of intracerebellar tumor found the pyramidal tract phenomena on the side of the lesion in eleven patients and on the other side in seven patients. In nineteen cases of tumor in the lateral recess he found the relative frequency of the lesion with the pyramidal tract phenomena on the side of the lesion to be even more striking, sixteen patients having shown these phenomena on the same side and only three patients on the other side. The explanation proposed by this author for the anomalous finding is: first, that the tumors with posterior fossa bring about a dislocation of the medulla, and in doing this, exhibit "contracoup" pressure on the pyramidal tract of the other side by forcing it against the basal plate of the occipital bone; and second, that such tumors damage the pyramidal tract of the same side below the decussation by herniating the medulla into the foramen magnum and jamming the tract against the bony ring of this opening. Neither of the theories will, however, explain the occasional occurrence of pyramidal tract phenomena on the side of the lesion, in lesions above the tentorium. A lesion in this location, even if sufficiently large to produce great intracranial pressure, is hardly capable of producing such alterations in the brain stem as is presumably caused by tumors below the tentorium, the resistance by the firm unyielding tentorium being entirely too great. In one of the cases of supratentorial lesions with homolateral pyramidal tract phenomena reported in this communication, the brain stem has been studied with particular care for evidence of herniation into the foramen magnum or compression of the contralateral pyramidal against the occipital plate and none was found. It appears, therefore, that there must be another mechanism at play in the production of pyramidal tract phenomena on the side of a lesion; at least, when the lesion is above the tentorium.

Homolateral pyramidal tract phenomena in supratentorial lesions are relatively rare. Their occurrence constitutes, however, an important factor, to be taken into consideration when we are to determine the laterality of the lesion, as in not a few instances this has led to an erroneous localization and misdirected treatment.

A case is thus reported by Purves Stewart[3]:

> The patient was a woman, age twenty-eight, who developed progressive mental deterioration without paralysis of limbs or face. There was a vague history of an attack of unconsciousness with twitching of the right side of the mouth. There was incontinence of urine. Under observation the optic disks, which at first were normal, became swollen, especially in the right eye. Left facial paresis appeared; the left knee-jerk became exaggerated and there was left-sided ankle clonus. On the other hand, she had several attacks of tonic spasm of the right shoulder and arm, followed by clonic twitchings. Coma soon supervened, and we were left in a quandary whether to attack the lobe corresponding to the paretic limbs or that corresponding to the attacks of facial spasm.
>
> Dr. Victor Horsley decided upon the former course, and he decompressed over the right frontal lobe in its posterior part, *i. e.*, the side corresponding to the left hemiparesis. The patient died a few days later, and a profuse gliomatous tumor was found occupying the whole of the left frontal lobe, extending from the precentral gyrus right forward to the anterior pole.

Similar errors in localization of the lesion and its treatment, due to the occurrence of the pyramidal tract phenomena on the side of the lesion, are reported by Flatau, Tucker, and others. It is clear, therefore, that the laterality of an intracranial lesion cannot be considered definitely proven by the presence of the pyramidal tract phenomena contralaterally to it, and that other phenomena which might aid us in determining the problem should be carefully looked for.

REPORT OF CASES

Following is a report of two cases with supratentorial lesions and homolateral pyramidal tract phenomena which have come under my observation. It is to be noted that in the cases previously reported with this finding the lesion involved the frontal lobe, and that in my two cases, likewise, the lesion affected this lobe.

Case 1 (Los Angeles County General Hospital, No. 244258).—H. F., male, age twenty-three, married, was admitted to the hospital on March 10, 1926, complaining of severe headache from which he had suffered for a month. Patient was a professional prizefighter and engaged in a fight on the night of March 3, 1926,

* Read before the Neuropsychiatry Section of the California Medical Association at the fifty-ninth annual session at Del Monte, May 1, 1930.

in which he was knocked out. The day preceding his admission to the hospital the patient had a generalized convulsion with unconsciousness which lasted about twenty minutes, and in which his whole body was rigid. Following this convulsion he had three others which were of a less violent character.

Examination revealed a well-developed muscular man who was groaning a great deal from severe headache. He was quite intelligent, speaking and understanding perfectly. His pupils were moderately dilated and reacted to light and convergence. Ocular movements were normal. The fundi were clear on the temporal half and obscured on the nasal side, equally on both sides. The biceps and triceps reflexes were normal on the left side and markedly exaggerated on the right side. The knee-jerks were exaggerated on both sides. He had a Babinski on the right side and a loss of the abdominal reflex on that side; a normal plantar and abdominal reflex on the left side. Patient improved, following a spinal puncture, and was in fair condition when on the evening of March 17 he became drowsy.

It was assumed that the patient suffered from a chronic meningeal hemorrhage and had a subdural hematoma over the right frontal lobe, regardless of the fact that the pyramidal tract phenomena were on that side, because he presented no evidence of aphasia. Preparations were made to operate on him the following morning, when about two o'clock he suddenly went into convulsions and died.

Postmortem report by Dr. George D. Maner was as follows: Brain and meninges: "The dura over the right hemisphere is tense, and on removing it the whole of the right hemisphere is covered with a relative thick, dark red, unorganized blood clot which reaches a maximum thickness of about one centimeter. This clot is very adherent to the inner surface of the dura, although it can be scraped away without difficulty, and portions are fluid. The pia of the right hemisphere is blood-stained, but the convolutions appear normal, although the whole hemisphere is somewhat compressed. The hemorrhage is localized wholly above the tentorium cerebelli and laterally by the falx cerebri. Am unable to demonstrate any definite point of rupture in either the meningeal or pial vessels. The lateral ventricles are of normal size and shape, and contain a small amount of clear spinal fluid. Cerebellum of normal size and shape. There are no hemorrhages within the brain substance. No hemorrhages within the posterior fossa, either extradural or intradural."

* * *

Case 2 (Los Angeles County General Hospital, No. 33827).—S. W., female, age eighteen, was admitted to the hospital on October 1, 1928, complaining of severe headache and attacks of vomiting. She states that three weeks before her admission she had a febrile attack in which her temperature rose to 102 degrees Fahrenheit, associated with which she had abdominal pain and headache. This lasted about one week, when these symptoms passed off and she went to a near-by resort to recuperate. The headache returned a week later and continued ever since. She also has had several attacks of vomiting, but temperature remained about normal—98.2 to 98.6 degrees Fahrenheit.

Examination on October 5, 1928, showed the following:

Patient is very intelligent and coöperates in the examination, but tends to become drowsy; pupils are unequal, left is wider. Both react normally; ocular movements are normal. Ankle clonus and Babinski on the left side. Weakness of the face on the left side. She has considerable rigidity of neck, but no Kernig. Both disks are choked, showing an elevation of about two diopters. X-ray of head (repeated several times) showed no necrosis of bone. The spinal fluid was under increased tension, had an excess of globulin, and ninety-two lymphocytes. The diagnosis was an abscess of the frontal lobe, right side. Unfortunately we had considerable difficulty in securing consent to an operation. In the meantime the patient, on October 7, suddenly went into convulsions and died.

Findings at *necropsy* were as follows:

"A yellowish area is readily noted on the left frontal lobe. The entire brain is fixed in formalin, but there is an enlargement of the left frontal region with the yellowish coloration previously mentioned. This tissue is somewhat firm at the anterior tip, but becomes soft at a distance of four or five centimeters posteriorly, and here the brain is flabby on palpation. No meningitis. No evidence of moulding about the brain stem (which might be caused by intracranial pressure). The lesion in the left frontal lobe is not incised at this time, but is consistent with brain abscess. There is no rupture into either ventricle, although the left ventricle is somewhat crowded or displaced by bulging of its floor. Fourth ventricle is negative."

THE CAUSATION OF THE ANOMALY

Kernohan and Woltman [4] of the Mayo Clinic report a case of a tumor of the left frontotemporal area which was associated with convulsions, spasticity, and a positive Babinski on the side of the tumor, and in which a postmortem study revealed distinct notching of the crus on the opposite side, evidently from pressure of this structure against the free edge of the tentorium. They assumed such notching of the contralateral crus, with the resultant destruction of its pyramidal tract to have been responsible for the occurrence of the pyramidal tract phenomena on the side of the lesion. That this pathologic process is not the sole cause of the anomaly is admitted by the authors themselves, as they have found the notching in numerous instances of brain tumor with the pyramidal tract phenomena on the side opposite to the lesion. Nor can the notching be considered the cause of the homolaterality of the pyramidal tract phenomena in those patients in whom there is associated with the latter an absence of phenomena on the other side. These should be present there from the immediate involvement of the cortex or internal capsule at the site of the tumor or abscess.

It is clear, therefore, that while variations in the distribution of pressure in the cranial cavity and the resultant displacement of the brain may suffice to explain the not infrequent homolaterality of the pyramidal tract phenomena in expanding lesions of the posterior fossa, they do not explain the occurrence of the anomaly in lesions above the tentorium. I therefore believe that the cause of the anomaly in the latter type of lesions is to be found in anatomic and functional abnormalities of the structures involved. Philip Zenner [5] has thus found a complete absence of the decussation of the pyramids in a case of gliosarcoma of the left frontal lobe with the hemiplegia on the left side. This anatomic abnormality has been noted in many instances and has been described by Flechsig, Probst, Dejerine, and others. Congenital abnormalities have been noted also in the relative size of the direct pyramidal tract and a tract also direct and efferent

and designated the ventrolateral tract, which was described by Stanley Barnes [6] and more recently studied by Inman.[7]

It is clear, of course, that in the absence of the pyramidal decussation the pyramidal tract phenomena from a brain lesion would be exhibited exclusively on the side of the lesion. On the other hand, if the abnormality be one in which there is a structural and functional predominance of the direct pyramidal tract, the phenomena would be present on both sides but would be more pronounced on the side of the lesion.

1930 Wilshire Boulevard.

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DISCUSSION

Thomas G. Inman, M. D. (2000 Van Ness Avenue, San Francisco).—Doctor Meyers opportunely calls attention to the misleading pyramidal tract signs which may arise from anomalies in the pyramidal decussation. Such anomalies do occur and have been observed in numerous instances, but unfortunately postmortem section has been necessary to demonstrate the cause of the error in diagnosis.

When we consider that the tracts may remain wholly uncrossed, or that there may be only a partial crossing, the value of other available aids to localization will be apparent. Here ventriculography may take first place as a means of determining the seat of the lesion.

But it would be incorrect to assume that all cases of anomalous crossing must lead to homolateral signs, for the fibers may cross lower in the cord, at, or near the segments which they were designed to serve. Only by the correlation of clinical signs with carefully stained serial sections can it be said with certainty that the homolateral tract functioned homolaterally.

Owing to the notorious unreliability of pyramidal tract signs as an aid to the localization of subtentorial tumors they should be disregarded in this connection. They are, however, of real value in confirming a suspicion that the underlying trouble is organic, no small aid in early cerebellar cases.

In cerebellar lesions, since both lobes will be exposed at operation, the chief value arising from a knowledge of which lobe is involved will be in the support which it gives to further investigation when inspection fails to disclose the nature of the trouble.

But in a surgical condition above the tentorium the first prerequisite to operation would be, at least, a knowledge of which side of the head to operate upon. Localization based upon pyramidal tract signs in an individual with abnormally distributed pyramidal fibers is just an unavoidable calamity only to be corrected by a prompt recognition of the probable cause of error.

In severe traumatism of the brain it sometimes happens that the pathological pyramidal tract signs emanating from the most severely injured hemisphere are temporarily withheld while those from the other side are present. In a comatose individual this condition is not easily recognized and decompression may be done on the side where it is least needed.

Those interested in this question are indebted to Doctor Meyers for his timely communication. A careful survey of the causes which lead to errors in diagnosis may be more fruitful of benefit than the recorded findings in many correct diagnoses.

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Samuel D. Ingham, M. D. (727 West Seventh Street, Los Angeles).—The cases reported in Doctor Meyers' paper are examples of the quite unusual occurrence of disturbances of the pyramidal tract on the side opposite from lesions of the brain associated with increased intracranial pressure, thus giving symptoms involving the extremities of the same side as the cerebral pathology primarily producing it. This anomalous condition must, of course, be explainable by the actual physical conditions present. There is nothing more consistent in clinical diagnosis than the manifestation of symptoms dependent upon lesions of the pyramidal tract. When the symptoms of motor weakness with increased tendon reflexes and diminished cutaneous reflexes involve the face, arm and leg of one, it may be assumed that there is some interference in the function of the pyramidal tract above the nuclear level of the seventh cranial nerve. Being above the decussation of the pyramids, the disturbance of the pyramidal tract must be opposite to the side of the body in which the symptoms are manifest. But when the primary pathology consists of a gross lesion it is on the opposite side from where the pyramidal tract is affected and it is sometimes difficult to explain the mechanism operating. The developmental anomaly of uncrossed pyramidal tract would explain the situation, but this condition is exceedingly rare. In the cases here described, as in others reported, the pathological conditions are located in the frontal region and of a nature to cause increased intracranial pressure. These conditions would seem to support the theory of a kind of "contracoup" pressure effect focused at some point along the pyramidal tract of the opposite side. Another possibility to be considered is the presence of multiple bilateral independent lesions, the one involving the pyramidal tract escaping detection. Cases of this kind illustrate the difficulty of diagnosis in all fields of clinical medicine in the presence of apparently contradictory symptoms.

ACUTE PROSTATITIS—ITS TREATMENT WITH HEAT APPLICATIONS*

By Burnett W. Wright, M. D.
Los Angeles

Discussion *by Edward W. Beach, M. D., Sacramento; Franklin Farman, M. D., Los Angeles.*

THE beneficial effect of heat in the treatment of acute inflammations of the prostate, posterior urethra, and seminal vesicles, especially when occurring in the course of an attack of gonorrhea, is well known. The various methods employed for raising the temperature of these structures include measures such as hot sitz baths, heat to the perineum, hot enemata, hot rectal irrigations with return flow, and diathermy. These measures, with the exception of the last named, diathermy, if left to the patient to be carried

* Read before the Urology Section of the California Medical Association at the fifty-ninth annual session at Del Monte, April 28 to May 1, 1930.

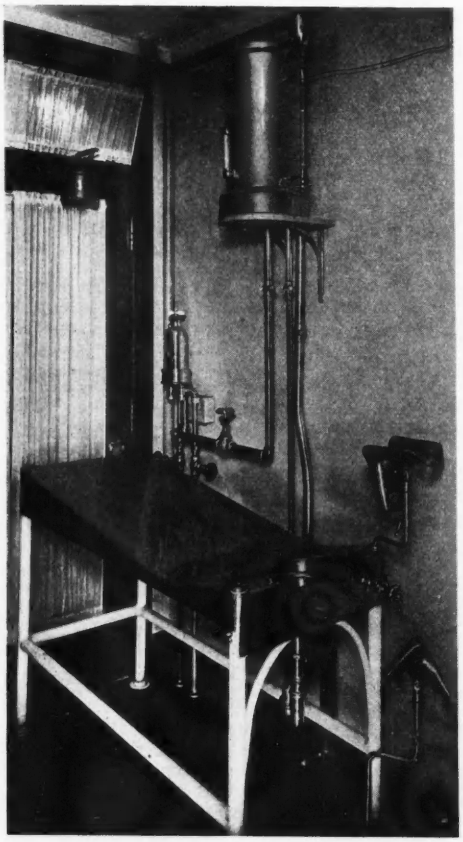

Fig. 1.—Constant temperature irrigating table (Wright)

out, are usually neglected, because of the trouble and inconvenience involved; and to be properly given, require the services of an attendant. In the use of diathermy, careful supervision is necessary to avoid doing more harm than good and the use of this modality to be effective, requires a better and more expensive type of coil than is found in the average office. Our experience with diathermy has been disappointing, and the failure to get the results described by Corbus, O'Connor and others, has caused us to abandon it.

AUTHOR'S METHOD OF HEAT APPLICATIONS

For the past eighteen months, we have treated our patients who were suffering from acute prostatitis and vesiculitis, and who were not frankly abscessed, by prolonged rectal irrigations, with solutions heated from 105 to 120 degrees Fahrenheit, depending on the tolerance of the patient to the heat, and on the degree of the inflammation present in the tissues. A special table, with provisions for controlling the temperature of the solutions employed, and for taking care of the return flow, was devised and manufactured by the R. L. Scherer Company. The method has proved so convenient, and the results of the treatment so satisfactory, that we consider it worthy of report.

Before installing this apparatus, it was exceedingly difficult for us to give a satisfactory rectal irrigation in the office. The ordinary Valentine irrigating jar, holding one gallon, required refilling repeatedly, the return flow had to be disposed of, and the temperature of the solution varied from too hot to too cold. The frequent raising and lowering of the jar disturbed the position of the rectal tube and added to the discomfort of the patient. In spite of these drawbacks, we believed, as did other urologists of our acquaintance, that the introduction of hot solutions in the rectum, the so-called Kemp irrigation, was the best means of raising the temperature of the prostate and contiguous structures, and was a valuable therapeutic measure. We are now able to give these treatments with a minimum amount of discomfort to our patients and little or no inconvenience to the office force, and as they are now given, a number of advantages have been noted.

DESCRIPTION OF THE TABLE

The apparatus consists of a substantial table 22 inches wide and 51 inches long, with a top of Monel metal, supported on a frame of neatly welded 1¼-inch iron pipe, with nonrust floor plates on the bottom of the legs. The rear three-fourths of the table top has an elevation of about five degrees. Immediately in front of this is a five-inch horizontal surface. The front section of the top is 10 inches long and inclines slightly upward. There is a large, built-in drain basin of Monel metal, and this is connected to a 1¼-inch waste. A comfortable pair of Bierhoff leg holders are extended down through the corners of the table top into the front iron pipe legs and are adjustable up and down therein without the use of lugs. A Leonard thermostatic mixing valve, model B-10, is connected to both the hot and cold water leads as furnished by the building. A pipe goes from the valve to a five-gallon metal tank placed 3 feet and 6 inches above the level of the table. A cut-off is between the Leonard valve and the tank. The tank has a removable top, a glass water gauge for measuring the level of the solution, a funnel for introducing medicaments into the solution, a thermometer installed in its base and readable from the outside, an overflow from near its top, connected to the waste, and a lead for conducting the solution to the table. This lead ends in a nozzle controlled by a cut-off, conveniently placed above the pan. One end of a short rubber tube is fitted to the nozzle, the other to the intake of the particular rectal tube to be used. The outflow of the tube, when in use, empties in the pan. The Leonard valve can be set to deliver water into the tank at from 80 to 130 degrees Fahrenheit. All plumbing, intercommunicating tubing, and valves are brass, nickel plated. The tank quickly fills to the overflow and the thermometer thereon registers. The intake valve is closed and the desired medication, if any, in correct concentration is poured into the funnel.

A pad is placed on the table, the patient assumes the lithotomy position, with the crutches under his knees, a suitable rectal tube is introduced and connected to the tubing, the outlet valve is opened and after determining that the apparatus is functioning properly and the patient is comfortable, we give him a magazine, invite him to smoke if he wishes, and leave him to the company of his own reflections. He rings a convenient bell when he observes the solution in the indicator getting low, or is in need of the attendant. The tank can

be quickly refilled as often as desired without disturbing the patient and the process repeated as many times as required. Two tankfuls, or ten gallons, will last about an hour, when the flow is correct. There is a loss of not more than one degree Fahrenheit in thirty minutes with the irrigation started at 110 degrees, which is the customary temperature used. There is no perceptible loss of heat between the tank and the rectal tube.

Concentrated solutions of common salt, or potassium citrate, in the proportion of nine grams to the liter are the medicaments used. Occasionally ichthyol, one-half ounce to the gallon, is added. Often plain water alone is employed. The rectum tolerates moist heat surprisingly well.

OBSERVATIONS ON PATIENTS TREATED

We have seen no evidence of proctitis following these treatments, in spite of the fact that some patients have had as many as ten daily irrigations. One patient developed a small thrombotic hemorrhoid. No other ill effects have been noted. Care must be taken to avoid bruising the inflamed prostate when introducing the tube, which should be well lubricated. Two patients developed abscesses requiring drainage; in both of these there was a well developed acute parenchymatous prostatitis present before the treatment was begun. A small abscess in another, ruptured into the urethra following an irrigation.

In a number of instances we have felt that the treatment aborted threatened suppuration and abscess formation. The relief from pain, frequency and dysuria under this treatment has been noticeable. The patient feels a decided sense of well-being afterward, and many cases of prostatitis remain ambulatory that might otherwise be bedridden. In acute posterior urethritis and catarrhal prostatitis, the improvement has often been striking, the second glass quickly clearing, making possible an earlier return to local treatment. As an adjunct to massage and irrigation in old chronic cases of prostatitis which have resisted treatment, it is distinctly valuable. The prolonged moist heat around the prostate softens and tends to liquefy the pent-up, purulent secretion in the congested follicles, and the massage, which should be given immediately after the irrigation, frequently will express a surprising amount from a gland that has been hard to empty because of inspissated plugs of secretion and débris blocking the acinal ducts. We believe that the responsive activity in the circulation in and around the prostate, causing a resorption of inflammatory exudate, is especially marked after these prolonged irrigations at a constant temperature. Marked variations in the temperature will defeat this object, in our opinion, by contracting and dilating vessels that should remain dilated and congested. We think this explains the failures from diathermy, where the fluctuations in the amperage, common in the usual type of coil, not only makes sudden changes in the electrical heat generated between the two electrodes, but frequently, in our hands, has caused forcible contractions of the musculature of the perineum, bruising the already inflamed tissues.

We think this treatment is contraindicated in tuberculosis of the prostate and vesicles, because of the danger of dissemination of the infection.

The effect of this treatment on the sexual neurasthenic is decidedly salubrious. He knows something is being done to cure his prostate when so much shiny apparatus is used, and the tinkle of the overflow is music to his ears.

It has given an increased comfort and more rest at night to an old man with hypertrophy of the prostate, who was opposed to an operation.

As a means of giving prolonged, hot, medicated vaginal douches, it is unexcelled and has been of real value in the treatment of gonorrheal salpingitis, endocervicitis, and vaginitis.

Finally, the table is excellently adapted to cystoscopy with an unlimited amount of irrigating fluid, which should be sterile of course, conveniently located, for delivery to the cystoscope.

727 West Seventh Street.

DISCUSSION

Edward W. Beach, M. D. (Medico-Dental Building, Sacramento). — Contemplation of Doctor Wright's article recalls Lord Bacon's brilliant essay, "Innovations." Says he in part, "Surely every medicine (remedy) is an innovation and he that will not apply new remedies must expect new evils."

Strictly speaking, however, Doctor Wright's innovation lies in the vehicle and not the remedy. The author has transferred his hoary passenger, "Moist Heat," from a one-horse shay to an elaborate barouche.

The application of heat for relief of inflammatory conditions doubtless antedates the Hippocratic collection. The readiness with which heat in some form could be obtained and used, together with its continued employment down through the ages attests its exalted therapeutic position. The value of heat as an antiphlogistic agent challenges disputation.

Consider the action of heat as applied to the bladder neck and contiguous structures from the standpoint of physiology alone. I fail to discern any difference, whether it be moist heat derived from Doctor Wright's ingenious apparatus or from the prosaic enema can; whether it be so-called "dry" heat generated by a rheostat like Bransford-Lewis' device or whether it be heat produced by tissue resistance to the passage of a frequently interrupted electric current as in diathermy. Theoretically the tissue response is identical. However, in each instance we must presuppose favorable conditions and that the apparatus is correctly and efficiently used without production of trauma.

Clinically, Doctor Wright has employed all these methods and has rejected all in favor of the present appliance. Clinical results must reign supreme, silencing both theory and the test tube.

Doctor Wright's apparatus has much to recommend it. It is simpler in application than diathermy, but certainly less comprehensive in its sphere of influence. Contrariwise, diathermy may be fundamentally apt in action, but in technical administration more difficulty is encountered than beset the inimitable Doctor Syntax "In Search of a Wife." With Doctor Wright's invention a rectal irrigation can be given without slop or fuss. It can be given slowly, with little or no trauma, under proper supervision and at just the right temperature. With this equipment an accurate procedure in the office is substituted for a haphazard, half-hearted treatment in the patient's chambers.

On the other hand, one must balance the installation cost, the extra space, and the increased office congestion against accrued results over the older methods.

I have enjoyed the essay and I should like to study the author's innovation first-hand and see it function.

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FRANKLIN FARMAN, M. D. (709 California Medical Building, Los Angeles).—Upon a visit to Doctor Wright's office, he personally explained and demonstrated to me the *modus operandi* of the new table devised by himself for the purpose of carrying out hot rectal irrigations in the treatment of prostatitis.

In my opinion, the Wright constant temperature irrigating table is an admirably adapted method of giving hot rectal irrigations in a simple, easily controlled, sufficiently prolonged manner to be effective. Very few patients will carry out at home rectal irrigations or any physiotherapy treatment consistently, yet they will submit readily to these measures in the urologist's office, especially when combined with prostatic massage and urethral medication.

Heat applications to an inflamed prostate act by relieving the engorged blood vessels and lymphatics, and by stimulating the reparative processes by inducing a more liberal supply of fresh blood and lymph to the entire organ. When followed by massage, the prostate is readily emptied of pus accumulations and cellular débris. No doubt more true abscesses of the prostate would be aborted if such treatment could be brought into action early.

Heat alone may reduce and cure an acute catarrhal prostatitis, but when dealing with the usual chronic type of postgonorrheal parenchymatous prostatitis, both heat and massage, and more heat and massage are necessary to bring about a restoration of normal prostatic secretion.

Doctor Wright certainly is to be commended for his effort to bring into modern usage such a valuable and age-old form of therapy, and this in the time of electrical invention.

*

DOCTOR WRIGHT (Closing).—Since this paper was read, my attention has been called to the Cable irrigating table, designed and patented by Dr. E. E. Cable of Portland, Oregon, for the treatment of inflammatory diseases of the pelvis and in use in various detention homes and clinics for giving vaginal douches. Our table resembles the Cable table in the use of a reservoir, with hot and cold water connections, and in the manner of disposing of the waste. The principal difference is in the employment of the Leonard thermostatic valve, which makes it possible to deliver the solution for long periods at a constant, regulated temperature, which we think is essential for the best results.

THE EFFECTS OF COFFEE ON SLEEP*

By LEO L. STANLEY, M. D.
AND
GORDON L. TESCHER
San Quentin

ENTIRELY independently, and without knowing of other work done on sleep disturbances, the medical department of the California State Prison devised apparatus and made some studies on the matter of the soundness of and movements during sleep.

It was hoped to secure data as to the normal changes of position which an individual made during his sleeping period and to find out what difference the drinking of a cup of coffee before retiring would show from the normal or average soundness and movements of sleep.

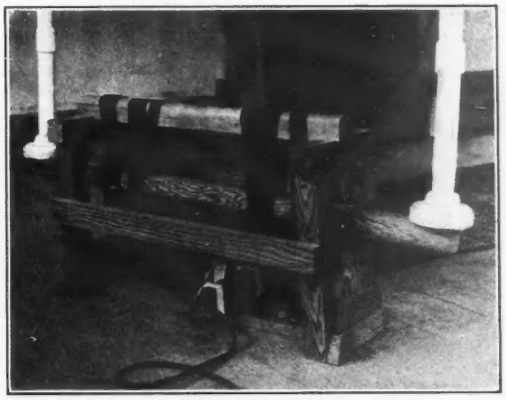

Fig. 1.—Showing how head of bed was placed on testing apparatus.

Apparatus.—The head of the bed was suspended on heavy rubber bands so that the least movement would shake the bed either up and down or sideways. Connected to the bed a compression bulb was arranged (Fig. 1).

To this was attached a rubber tube leading to another compression bulb at the kymograph.

To the latter bulb a pen was so fixed that it would write on a moving sheet of paper, propelled by an electric motor.

Any movement of the bed was transmitted by air pressure to the recording apparatus (Fig. 3).

SUBJECTS CHOSEN FOR THIS STUDY

Subjects.—Seven men were selected for the tests, as follows:

	Age	Wgt.	Occupation in prison	Crime	Time Served
No. 1	19	125	Lab. technician	Murder	2½ years
No. 2	38	215	Druggist	Robbery	4 years
No. 3	47	126	Doorkeeper	Kidnapping	10 years
No. 4	28	180	Male nurse	Robbery	5 years
No. 5	42	172	Surgical nurse	Murder	4 years
No. 6	22	135	Lab. technician	Robbery	2½ years
No. 7	29	140	Chief technician	Murder	11 years

All had been in prison over two years and they were in good health. These men were excellent subjects in that their daily routine varied only slightly from day to day. They had had no alcohol or other stimulants, and had retired every

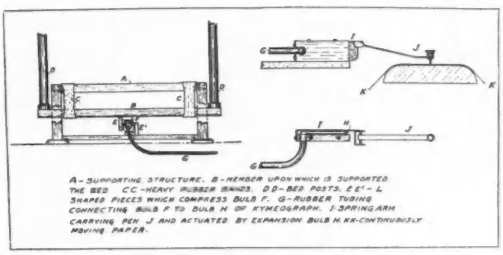
A-SUPPORTING STRUCTURE. B-MEMBER UPON WHICH IS SUPPORTED THE BED. CC-HEAVY RUBBER BANDS. DD-BED POSTS. E E'-L SHAPED PIECES WHICH COMPRESS BULB F. G-RUBBER TUBING CONNECTING BULB F TO BULB H OF KYMOGRAPH. I-SPRING ARM CARRYING PEN J AND ACTUATED BY EXPANSION BULB H. KK-CONTINUOUSLY MOVING PAPER.

Fig. 2.—Diagrams of apparatus.

* From the Medical Department, California State Prison, San Quentin.

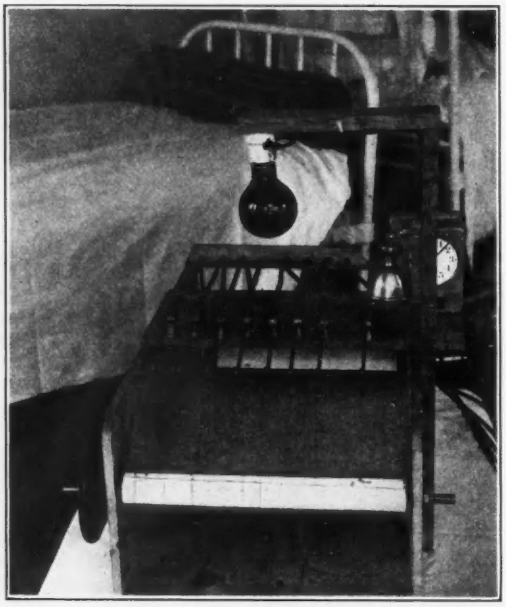

Fig. 3.—Another view of the testing apparatus.

night at approximately the same time during their incarceration. They were intelligent and coöperative.

METHOD USED IN TESTS

Procedure.—For eighteen days, August 15 to September 1, 1930, a normal was established. For nine days, September 2 to September 10, each man was given a cup of hot water (225 cubic centimeters) on retiring. For ten days, September 11 to September 21, each man was given a cup of coffee (225 cubic centimeters) instead of the hot water.

This coffee was of a standard brand and was made by tricolating four tablespoonfuls with boiling water for seven cups.

The movements during the sleeping period were recorded on the kymograph. These figures are shown by Table 1.

TABLE 1.—AVERAGE NUMBER OF MOVEMENTS PER HOUR

A. Movements When Nothing Was Given Before Retiring

Date	Subj. 1	Subj. 2	Subj. 3	Subj. 4	Subj. 5	Subj. 6	Subj. 7	Average
Aug. 15	9.1	15.6	6.66	8.44	14.9	21.6	12.1	12.62
Aug. 16	.....	.....	.....	.....	.....	.....	.....	.....
Aug. 17	11.7	24.4	6.88	13.5	16.3	19.3	12.1	14.88
Aug. 18	7.7	13.6	7.00	9.33	8.77	14.9	14.4	10.81
Aug. 19	.....	.....	.....	.....	.....	.....	.....	.....
Aug. 20	13.1	8.94	7.1	10.81	15.7	23.1	15.6	13.33
Aug. 21	12.5	7.4	5.7	12.7	12.1	13.1	13.9	11.05
Aug. 22	12.7	13.8	7.71	13.0	16.9	14.7	15.4	13.46
Aug. 23	17.3	9.2	4.7	12.7	16.46	22.6	20.1	14.72
Aug. 24	16.4	16.6	5.8	9.8	14.8	7.8	.....	10.17
Aug. 25	17.69	11.4	5.42	7.31	16.6	5.8	8.3	10.36
Aug. 26	12.0	17.0	3.58	15.28	14.9	6.9	12.33	11.71
Aug. 27	10.4	9.00	3.2	8.5	12.8	6.4	9.1	8.48
Aug. 28	6.66	12.9	2.58	14.2	11.2	3.7	8.0	8.46
Aug. 29	11.6	10.2	5.1	6.4	12.3	7.8	3.7	8.15
Aug. 30	11.4	9.6	6.66	5.8	13.09	11.09	6.72	9.19
Aug. 31	14.7	5.5	6.2	8.4	10.03	6.7	11.7	9.07
Sep. 1	9.73	6.10	7.1	7.33	11.6	10.0	12.4	9.80
Period average	12.76	11.95	5.71	10.21	13.67	12.21	10.99	10.98

B. Movements When Hot Water Was Given Before Retiring

Date	Subj. 1	Subj. 2	Subj. 3	Subj. 4	Subj. 5	Subj. 6	Subj. 7	Average
Sept. 2	8.37	8.00	5.8	6.0	11.6	6.6	9.2	7.93
Sept. 3	11.0	8.00	4.66	5.1	9.76	6.25	8.8	7.65
Sept. 4	11.63	6.94	3.85	7.25	9.17	5.7	10.7	7.89
Sept. 5	8.9	7.20	4.4	3.8	6.1	6.4	8.8	6.51
Sept. 6	8.6	6.3	....	5.6	8.2	7.6	8.6	7.48
Sept. 7	17.5	8.8	6.0	5.8	6.4	6.5	12.8	9.11
Sept. 8	30.9	6.82	6.0	6.6	8.2	5.65	9.0	10.45
Sept. 9	18.66	9.66	8.0	9.55	10.0	7.77	11.2	9.25
Sept. 10	13.2	12.0	....	7.8	8.9	8.6	12.9	10.56
Period average	14.30	8.19	5.53	6.39	7.54	6.28	10.22	8.35

C. Movements When 225 Cubic Centimeters of Coffee Was Given Before Retiring

Date	Subj. 1	Subj. 2	Subj. 3	Subj. 4	Subj. 5	Subj. 6	Subj. 7	Average
Sept. 11	19.5	9.0	10.9	8.33	9.4	5.8	10.0	10.40
Sept. 12	12.1	7.64	7.4	6.37	8.0	8.0	11.1	8.69
Sept. 13	12.20	6.10	6.75	9.37	11.60	8.80	12.30	9.59
Sept. 14	20.20	10.40	5.28	7.26	12.50	8.10	12.0	10.82
Sept. 15	8.2	6.9	6.4	6.00	10.3	10.2	9.4	8.20
Sept. 16	7.0	12.8	5.3	.....	9.0	8.8	10.9	8.90
Sept. 17	9.25	9.6	5.14	10.97	10.75	4.3	11.86	8.84
Sept. 18	.....	.....	.....	.....	.....	.....	.....	.....
Sept. 19	4.6	10.3	6.1	5.8	13.6	6.6	11.3	8.30
Sept. 20	7.3	8.5	6.2	6.5	9.2	7.3	11.5	8.00
Sept. 21	5.0	8.0	7.1	7.2	8.0	5.7	6.7	6.80
Period average	10.5	8.92	6.58	6.78	10.23	7.28	10.7	8.85

In order to check up on these findings, a second series was run. This included a normal period, September 22 to October 2, 1930; a hot water period, October 3 to October 12; and a coffee period, October 13 to October 22.

The figures obtained are shown in Table 2.

TABLE 2.—AVERAGE NUMBER OF MOVEMENTS PER HOUR (CHECK SERIES)

A. Movements When Nothing Was Given Before Retiring

Date	Subj. 1	Subj. 2	Subj. 3	Subj. 4	Subj. 5	Subj. 6	Subj. 7	Average
Sept. 22	10.8	9.1	6.0	7.5	10.5	5.5	10.1	8.5
Sept. 23	13.0	8.3	6.8	7.5	10.6	9.0	12.6	9.7
Sept. 24	10.3	5.1	8.0	6.7	10.6	9.3	12.6	9.0
Sept. 25	10.7	5.7	6.6	9.4	17.4	6.6	15.2	10.2
Sept. 26	8.1	6.6	7.8	11.5	15.6	7.6	10.8	9.7
Sept. 27	9.0	15.1	6.0	9.1	14.8	10.8	11.3	10.9
Sept. 28	8.8	13.6	6.6	8.3	14.1	7.3	10.9	9.9
Sept. 29	7.4	10.0	4.9	9.0	15.6	7.4	11.1	9.3
Sept. 30	9.0	17.1	7.7	6.6	16.5	7.2	14.0	11.2
Oct. 1	....	.....	.....	.....	.....	.....	.....	.....
Oct. 2	16.2	5.5	6.8	9.7	13.0	9.0	11.0	10.2
Period average	10.33	9.0	6.72	8.53	13.87	7.97	11.95	9.86

B. Movements When Hot Water Was Given Before Retiring

Date	Subj. 1	Subj. 2	Subj. 3	Subj. 4	Subj. 5	Subj. 6	Subj. 7	Average
Oct. 3	14.1	5.2	4.1	....	13.0	6.4	9.7	8.75
Oct. 4	14.4	10.1	2.2	6.1	16.7	9.5	14.3	10.5
Oct. 5	15.3	13.4	1.6	4.0	16.0	8.0	10.7	9.85
Oct. 6	12.1	5.2	5.7	4.4	13.7	5.8	7.8	7.81
Oct. 7	9.7	6.5	5.0	6.1	10.6	8.7	8.6	7.9
Oct. 8	7.0	5.9	4.6	4.3	8.5	....	10.2	6.75
Oct. 9	10.1	4.1	5.0	5.8	11.1	7.1	10.1	7.46
Oct. 10	10.9	3.8	3.4	4.3	9.7	14.0	9.4	7.93
Oct. 11	10.0	5.3	5.0	5.2	18.3	8.0	11.6	9.00
Oct. 12	9.3	5.5	4.8	3.2	11.0	5.8	10.8	7.2
Period average	11.29	6.5	4.14	4.84	12.86	8.14	10.32	8.51

C. Movements When 225 Cubic Centimeters of Coffee Was Given Before Retiring

Date	Subj. 1	Subj. 2	Subj. 3	Subj. 4	Subj. 5	Subj. 6	Subj. 7	Average
Oct. 13	8.7	3.8	3.2	4.6	....	6.9	9.4	6.13
Oct. 14	....	8.5	4.6	4.7	7.2	5.6	....	6.12
Oct. 15	7.0	8.9	5.5	9.2	13.2	8.7	....	8.75
Oct. 16	5.0	10.1	4.2	5.0	13.0	....	9.4	7.71
Oct. 17	7.2	11.1	5.4	6.5	10.2	....	9.1	8.25
Oct. 18	6.6	5.2	2.2	4.7	11.5	....	13.0	7.12
Oct. 19	9.2	9.4	4.9	3.4	14.0	8.6	8.5	8.3
Oct. 20	6.8	5.2	4.7	3.0	14.3	5.4	8.1	6.8
Oct. 21	3.1	8.7	4.4	....	14.4	4.5	8.7	7.3
Oct. 22	5.7	5.5	5.0	....	9.2	4.7	8.5	6.4
Period average	6.6	7.64	4.41	4.11	13.0	6.2	9.3	7.29

The average of all hourly movements of all seven men is shown below:

	First Series	Second Series	Average of Both
Normal	10.98	9.86	10.42
Hot water	8.35	8.51	8.43
Coffee	8.85	7.29	8.07

COMMENT

From these figures it is seen that in two series the average of movements per hour of seven men normally was 10.42. With hot water on retiring, it was 8.43. With cup of coffee on retiring, it was 8.07.

CHRONIC MENINGOCOCCEMIA*

REPORT OF CASES

By FRED B. CLARKE, M. D.
Long Beach

THE medical profession ordinarily thinks of meningococcus infections as meaning meningitis and naturally this phase of the disease, because of its gravity, has received the greatest amount of attention. The outstanding characteristics of this meningeal involvement are now universally recognized. The fact that at times meningococcus infection may result in chronic bacteremia with rather characteristic symptoms is not so well known, nor is it a matter of common knowledge that meningococcemia may cause lesions in any endothelial-lined structure of the body.

Netter[1] has called attention to the frequency with which chronic meningococcemia occurs. The reports in foreign literature suggest that either chronic bacteremia occurs more frequently in Europe or that the attention of their medical men has been directed to the fact that, meningococcus infection does not always mean meningitis, and that it may result in a general bacteremia, with or without involvement of any endothelial lined cavity, such as the synovial membrane, the endocardium, etc. In this country Warfield and Walker,[2] Morgan,[3] Cecil and Soper,[4] Krumbhaar and Cloud,[5] and others have reported several instances in which meningococcemia has produced ulcerative endocarditis without there being any evidence of meningeal infection.

Herrick,[6] who had ample opportunity to observe meningeal infections during the war, has shown that bacteremia precedes meningeal symptoms in the majority of cases. Other observers have corroborated these findings so it is not surprising to find an occasional case which never develops meningitis, and if developed, it does not occur until after the bacteremia has been present for a number of months.

The first proven case described of the meningococcus occurring in the blood stream was reported by Gwynn[7] in 1898. Two years elapsed before Salomon[8] reported a case of chronic meningococcemia. Since that time a number of cases have been reported in European literature. In this country relatively few cases have been reported. According to Dock,[9] only nine cases were reported up to 1911. Graves and Michelson[10] state that up to 1928 there were but fifteen proven cases of a chronic type of meningococcus bacteremia reported. Dock reports a number of cases which hardly fit in with the type of chronic meningococcemia here described because he included those cases "in which there was a febrile period of at least one week without meningeal symptoms and whose clinical course changed abruptly after meningitis supervened."

While it has been common knowledge that the fulminating type of case has resulted from an overwhelming blood infection, it has not been so well understood that the typical case of cerebrospinal meningitis is usually preceded by a bacteremia. Herrick and others in this country have shown that it is possible to secure positive blood cultures in about half these cases. Probably a larger percentage exists but the laboratory difficulties, together with the marked reduction of the organisms in the blood stream when the meninges become involved, make it exceedingly difficult to obtain positive cultures.

Warfield and Walker, Cecil and Soper, Rhoads,[11] Westenhoeffer,[12] Weichselbaum, and Ghon,[13] furnish evidence that endothelial lesions frequently occur. When the general practioner becomes conversant with this fact many cases of long and unexplained fever may be correctly diagnosed.

The earlier conceptions of meningococcus infection have geen decidedly modified in the last few years. We now feel that an acute meningococcus bacteremia precedes the usual type of cerebrospinal meningitis, the blood infection preceding the meningeal symptoms by a relatively short time. Positive blood cultures may be obtained early, depending upon the laboratory methods used.

Medical men are less familiar with acute fulminative meningococcus bacteremia which has been so well described by Herrick and others. This type represents an overwhelming infection with rapid onset, chills, marked prostration, a temperature which may be high or at times subnormal, pupuric eruption and the entire course lasting, as a rule, not over forty-eight hours and ending in death. At autopsy these cases may show no involvement of the meninges whatever, and the diagnosis is made from cultures.

Chronic meningococcemia represents rather a distinct clinical type of this infection. The onset is abrupt, there are chills followed by fever and at times there are vague joint pains and a rash. From the diagnostic standpoint the temperature curve is characteristic and important. It is frequently intermittent and is identical with the curve of the tertian or quartian type of malarial infection. Netter states that many patients have received treatment for a malarial infection because of the characteristic temperature curve.

* Read before the Southern California Medical Association at Long Beach, November 1, 1930.

One rather characteristic and interesting factor of this condition is the length of time the temperature may persist, several patients having been ill for a period of three or four months and one patient was reported as having had a temperature for seven months before meningeal symptoms occurred. Nearly all patients eventually develop meningitis if not diagnosed early and antimeningococcic serum administered.

Treatment by administration of polyvalent antimeningococcic serum is quite naturally most successful when given as early as possible. The amount of serum required varies decidedly in individual cases so far reported. The amount varies from 90 cubic centimeters; in one case reported 1000 cubic centimeters were given. After meningitis develops it would seem that the serum is not so efficient as one would expect, probably due to the general and prolonged bacteremia.

The two cases I am reporting seem, aside from their clinical interest, unique as they occurred in mother and son. Insofar as I am able to learn from literature, this disease has not been previously reported as occurring in two members of the same family.

SYMPTOMS

Usually the temperature is preceded by chills occurring on the second, third and fourth days, with quite definite regularity, without much prostration of the patient between the chills. In the second patient the chills were attributed to malaria, as he had had a definite malarial infection twenty years before, and lived in a section of the country where malaria is not unknown. When the intermittent type of temperature is accompanied by a leucocytosis, one questions the possibility of malarial infection. As the case progresses the temperature curve usually loses its intermittent character and becomes more constant, accompanied by chills and rather profuse sweats.

The joints are usually involved, the ankle joints and the knees more often than those of the upper extremities. Upon movement they are painful, at times swollen, but there is seldom any feeling of increased heat and as a rule they do not contain purulent material. The ankle joints of the second patient were much more painful than the knees; at times they were slightly swollen, never red and unless moved were not acutely painful. The sensation was described as a severe ache.

Skin eruptions are present in the majority of cases and are described as petechial, macular or nodular. The color varies from bluish to bright red. Some are painful, others not. They have been described in one case as dull red, nodular areas with white centers. It seems that the time and extent of the skin lesions are decidedly variable, occurring in some cases at the onset of the fever and continuing several weeks, in others occurring several weeks after the onset of the fever. In Case 2 the eruption was not noticed by the patient until after the third week of his illness, recurring at frequent intervals. They were from 1.0 to 1.5 cubic centimeters in diameter, distinctly nodular, hard and slightly tender to the touch, a dull red in color, fading gradually to a bluish discoloration which persisted for a week or more, and appearing in succeeding crops following the chills.

REPORT OF CASES

Case 1.—R. M., female, age sixty-two, was admitted to St. Mary's Hospital September 1, 1926, having had a temperature for about twenty-four days.

Present Illness.—Pronounced and far advanced cardiorenal disease which had resulted in a cerebral thrombosis with complete right-sided hemiplegia and rather marked mental deterioration. Her condition required the constant attention of nurses because of mental confusion and incontinence.

About three weeks before her admission to the hospital it was noticed that she had a temperature which varied from 99.6 to 100 F. daily. During this time her pulse averaged from 70 to 104, with normal respiration. One week before admission to the hospital it was noticed that there was quite an increase in temperature, she was becoming exhausted, and the mental confusion seemed more pronounced.

The first two weeks she was in the hospital her temperature averaged from 100 to 101½ F. each day; highest usually in the evening. Agglutination tests for typhoid were negative; examination of the blood for malaria was negative. The leukocyte count averaged from 10,000 to 12,000, polymorphonuclear leukocytes from 65 to 76 per cent. The urine showed a moderate amount of albumin. The N. P. N. was at times as high as 100 milligrams. The creatinin varied from 4.5 to 6 milligrams. Blood cultures on September 14 and 17, 1926 were negative, but a culture taken on the 20th showed Gram-negative diplococci, agglutinating with antimeningococcic serum. It was deemed advisable to do a lumbar puncture. The spinal fluid was negative as regards cell count, globulin, etc. Within the next forty-eight hours 90 cubic centimeters of polyvalent antimeningococcic serum were administered intravenously. Her temperature subsided very promptly and she was discharged from the hospital on October 26, 1926. She lived until the following January, when she died of renal insufficiency without having a recurrence of her infection.

* * *

Case 2.—S. M., male, age forty-three, was admitted to St. Mary's Hospital on May 23, 1929.

History of Present Illness.—Ten weeks prior to his illness he developed chills and fever of 103 F. which lasted about eight hours, following which he had no trouble for two days; then on the third day he had another chill and fever. This has occurred with definite regularity for about ten weeks. It was only after going to the hospital that he had a chill every day accompanied by a temperature of 99 F. in the mornings to 103 F. in the afternoon.

During the first four or five weeks of his illness he was well enough to supervise the work of forty or fifty employees for two succeeding days, but he always stayed home on the third day because he knew he would have a chill and feel very bad.

A few weeks after the onset of his trouble he noticed curious spots like flea-bites over his arms, hands, chest, and a few over his abdomen and the tibial surfaces of his legs. These lasted two or three days and then disappeared. About a week after the onset of his trouble he had aching in his joints, particularly those between the small bones of his hands, wrists, and ankles. The joints were never swollen or inflamed.

Three weeks after the onset of his trouble he consulted a local physician who thought he had malaria, inasmuch as there had been a history of malaria

twenty years before. Quinin was administered in large doses without results. Following this he consulted another physician who undoubtedly felt that he had some generalized infection, as he had a blood culture made with negative results. Following this he was advised to have six or seven infected teeth removed, which he did, without any improvement.

Because of the aching in the joints the patient thought that he had a rheumatic infection and on his own initiative he went to a hot springs, where he took a series of baths. These did not prove of any benefit to him. Shortly after this he was admitted to the hospital.

Past History.—Patient had had measles, chickenpox, whooping-cough; typhoid fever at the age of twenty, pneumonia one year later. Twenty years ago he had malaria, which lasted a few months. Tonsillectomy had been performed in childhood, but it is quite evident that the tonsils had only been clipped off. Double herniotomy had been performed eight years ago. In addition, he had a great deal of catarrh, as he expresses it, with a large amount of postnasal dripping.

Examination.—His appearance was that of a man in fair nutrition. He was quite weak, but not so weak as one would expect in an individual who had had a recurring temperature and chills for a period of ten weeks. Skin showed a decided eruption, which will be described later. The pupils were equal, regular, and reacted to light and accommodation. Fundi normal. The nose showed definite deflection of the septum to the right. Turbinates were enlarged. The left maxillary did not transilluminate clearly. The tonsils were very red and ragged. The anterior pillars were exceedingly red. Those teeth he had remaining were in fair repair. There was no enlargements of the thyroid, or other glandular enlargement.

Expansion was equal and regular on both sides. No change in the percussion notes and no unusual sounds were heard over the lung parenchyma.

The heart was slightly larger than normal. Blood pressure was 120.80. No murmurs.

There was no enlargement of the liver or spleen, and no areas of tenderness over the gall bladder or appendix. The rectum and prostate were normal. Reflexes were all present and equal. He had a maculopapular eruption, thirty or forty in number. These apparently came on in crops every few days, and usually after a severe chill. About one-half of them were distributed over his chest and abdomen, the others on the flexor surface of his arms and over the anterior surface of his legs below the knees. They varied in size from 1.0 to 1.5 centimeters in diameter, were decidedly raised, hard and somewhat painful. To the examining finger they were quite indurated and did not disappear upon pressure. The center of the eruption was not so red as the edge. They did not itch, nor was there any evidence of hemorrhage.

Blood Cultures.—After he was admitted to the hospital four blood cultures were made, all of which were negative. The blood was checked for Malta fever and typhoid with negative results.

The heart condition was of very great interest. At the time of his admission to the hospital no murmurs were detected although they were looked for. On June 1, one week later, a very low-toned systolic murmur was heard, loudest over the mitral area, and it was not transmitted. Within a few days this murmur became much more definite and a diagnosis of malignant endocarditis was made.

He insisted on leaving the hospital and five additional cultures were made. The eighth culture showed numerous small colonies of Gram-negative diplococci. Number 9 showed the same cultures as on the one on June 20, 1929. Subculture grown on blood serum showed agglutination with antimeningococci serum.

Diagnosis.—Meningococcemia.

Nose and throat cultures were made several times, and the fifth culture on June 20 showed the same type of organism that was found in the blood stream.

Treatment.—One hundred and eighty cubic centimeters of polyvalent antimeningococcic serum were given intramuscularly over a period of five days. Temperature remained normal after the fourth injection. An effort was made to give this serum intravenously, but with such a severe reaction, even after the ordinary procedure for desensitization was carried out that it was deemed advisable to give it intramuscularly. The length of his illness was fifteen weeks.

Subsequent History.—Following recovery he was not so well as before. He tired easily and had a great deal of aching in his feet, particularly around his heels.

Nasal cultures were made several times after his infection, with negative results.

Five months after his illness, he still had some nasal discharge, the culture from which was negative. One month later, nasal cultures were made on three different occasions on three different media, and they did not show any meningococci. At this time the heart was not enlarged and there was no evidence of a murmur.

March 3, 1930: Patient is apparently not so well as he was before his illness. He tires easily and his feet and ankles are quite tender and sore.

COMMENT

How the mother acquired the infection one may only speculate, certainly the few contacts, all of whom were well, limited the field. One might conclude that she was a carrier and thereby infected herself or acquired this infection from her son who was a chronic carrier. The second patient, the only one who had a nasal discharge, had a positive nasal culture two years and eight months later. It is reasonable to suppose that he was a chronic carrier of the organism and because of lowered resistance or increased virulence of the organism he developed a general septicemia. There are families who have a low resistance to certain organisms and this may serve as an explanation for the occurrence of two cases in this family of mother and son.

Whether or not there is an undifferentiated strain of the meningococcus which is more apt to produce septicemia and involvement of the endothelial structures has not as yet been determined.

The general condition of this second patient all through his illness was surprisingly good, much better than one would expect after chills and high fever had persisted for approximately four months.

The heart murmur was very interesting, developing as it did while he was in the hospital. This murmur was so decided that in conjunction with the chills and fever, joint pains and skin eruption, a diagnosis of malignant endocarditis was made. Within a short time, following the subsidence of temperature, the murmur disappeared. Whether or not the mitral endocardium was involved by the meningococci or the murmur

developed as a result of weakness of the myocardium from the continued toxemia, is a question of interest but one which cannot be decided.

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CEREBELLAR ATAXIAS

REPORT OF SIX CASES

By J. M. NIELSEN, M. D.
AND
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THE writers have encountered in the last few years six instructive cases of cerebellar ataxia which illustrate well how the various types of these cases merge and how extremely difficult the diagnosis may be in certain forms.

There is a basic symptomatology common to all cases whether hereditary or not, and whether beginning early in life or late. The various types of symptomatology known by the names of their discoverers are to the basic symptomatology as mountain peaks are to the earth—the same material is present, the difference being in the prominence of certain features.

REPORT OF CASES

CASE 1. (Illustrating the general, basic symptoms, not belonging in any particular type.) D. C., a man of thirty years, unmarried, was brought to us unable to walk because of inability to maintain his balance. There were no similar cases in his forebears. There was only one sibling, a married sister of thirty-two who was well and who had young children still healthy.

The history was obtained to the effect that the patient had unusual difficulty in learning to use his lower extremities when he first learned to walk at fifteen months. He had never walked well. At the age of six or seven years, speech difficulty became manifest in the form of jerky utterances, making pronunciation poor. At the age of ten or twelve he left school in the fourth grade because it was too great an effort for his parents to get him from his home to the schoolhouse. There was said to have been no progress of the disease for many years.

A neurological examination gave the following positive findings: Marked mental retardation, marked concentric contraction of the visual fields, bilateral paralysis of convergence with an irregular nystagmus. There was also limitation of movement of the eyes separately in every direction. In looking up, first one eye, then the other, overshot. At the fixation point a tremor was present. Both labyrinths were probably normal, but a central disturbance caused irregular responses which were elicited by very slight stimuli. The vocal cords were ataxic, causing sudden, unexpected changes in pitch. The speech was ataxic and slurring, at times indistinct, at times unintelligible. The head was held to the left.

There were involuntary, irregular movements of the pectoral muscles on the left. Respirations were irregular and jerky from ataxic movements of the chest and diaphragm. Adiadokokinesis was marked. The entire trunk was in a constant state of titubation whenever the patient attempted to sit or stand. Any tendency to fall was invariably overcorrected (hypermetria).

There were ataxic movements of the upper extremities, especially the left, but there was no rigidity. The vasti, lateralis of both thighs were rigid. Patellar reflexes were greatly increased, more on the left. Babinski and Chaddock signs were present bilaterally and also a Gordon reflex on the right. In attempting to walk, the patient went into a reeling, tottering, stumbling gait, which ended after not more than ten feet in a fall. His nasal bones had been broken several times in such falls. The spinal fluid was entirely negative.

There were no sensory disturbances, but quite a marked arteriosclerosis with elongation of the aorta as shown by fluoroscopic examination.

This patient showed the basic characteristics found in all types of cerebellar ataxia: First, a slow ataxia, manifested in cranial nerves, trunk, and extremities, giving rise to nystagmus, staccato speech, chorea-like movements of limbs and titubation, and second, signs of involvement of the pyramidal tract. He does not belong to any one type.

The pathology in these cases consists in a primary neuronic degeneration with secondary glial formations in the posterior columns of the cord; both direct and indirect cerebellar tracts and, of course, in Clark's column; the cerebellum and its direct connections; the ascending frontal convolution; and in the neurons of the retina.

The degeneration is first peripheral and a slow "dying back" toward the center occurs.

* * *

CASE 2. (Friedreich's ataxia.) C. S. A boy of seventeen years whose brother developed a similar condition at the age of thirteen and was helpless at the age of eighteen.

The patient had had measles at the age of two, influenza at ten, pertussis and chicken-pox at twelve, and typhoid at fifteen.

The trouble complained of had begun at the age of thirteen with awkwardness in getting about. (Usually the disturbance is not noticed until it has attained some degree of severity.) His strength and endurance remained good; he was still able to walk ten miles. His sleep was restless and somnambulism had occurred.

A neurological examination showed a dulled mentality with low intelligence. The right pupil was slightly larger than the left. A nystagmus was present on looking upward. Articulation was jerky and indistinct. There was a marked dorsal scoliosis. The deep reflexes in the arms were much diminished. The

knee-jerks and tendo Achilles reflexes were absent. Bilateral pes cavus with hammer toes was present. The gait was reeling, staggering, and difficult.

This conforms to the Friedreich's type, which is characterized by an insidious onset in childhood, familial occurrence, ataxia first to appear, by nystagmus, speech disturbance, contracture of feet, absence of deep reflexes, spinal curvature, staggering ataxic gait and no disturbance of sensation. It differs from the preceding, especially in the absence of deep reflexes.

The pathology in this group is found mainly in the posterior columns of the cord; the crossed pyramidal tracts; and in both direct and indirect cerebellar tracts and Clark's column.

The posterior columns degenerate before the lateral, which fact accounts for the loss of deep reflexes.

* * *

Case 3. (The type of Marie.) G. D. R. A man of twenty-nine years came because of a "hopping gait." There was no similar trouble in the family. One brother had died of pneumonia, one of kidney trouble, but three were living and well at thirty-two, thirty-five, and thirty-eight years, respectively, One sister was well at forty-two years. The patient was the youngest of the family.

The personal history was to the effect that the patient had been well until twenty-four years of age, when he was thrown out of a vehicle, and soon afterward noticed his tendency to "hop." (The hopping, however, was due to contracture of the gastrocnemius and soleus muscles which made it almost impossible for the patient to touch his heels to the floor. This could not have developed in a few days.)

The neurological examination revealed concentric contraction of color fields; weakness in both external recti of the eyes, more on the right; fine nystagmus on fixation to left, not constant; twitching of the eyelids and some twitching of the facial muscles, especially on movement, and more so on the left. The speech was irregular, explosive, jerky. Linguals and labials were not well articulated. Adiadokokinesis was definite. The deep reflexes of the arms were lively, but the right abdominal was absent. There was a clonus of the left gluteal muscle elicited by merely applying the hand in pressure. The knee-jerks were increased, but equal. The right tendo Achilles jerk was increased. A Babinski sign was definite on the right, not definite on the left. There were also a positive Gordon reflex and an akle clonus on the right. The trunk muscles showed some ataxia, but the gait was rendered peculiar more by the condition of the lower extremities. The patient walked on his toes as though they were springy stilts and he wobbled from side to side, unable to stand still. The Romberg sign was negative. This patient also had considerable arteriosclerosis with elongated aortic arch. The spinal fluid gave a colloidal gold curve with reduction in the middle three tubes.

This case conforms to the type of Marie and was characterized by an onset later than Friedreich's, and a spasticity of lower extremities with increased reflexes. But it lacked optic atrophy, which is common in Marie's type.

The patient claimed that he was greatly improved by our treatment and, much to our surprise, married shortly after our examination. One year later he was totally disabled.

The pathology, like the clinical picture, is not sharply defined. Marie believed that it was confined to the cerebellum, but later autopsies have shown more diffuse involvement.

* * *

Case 4. (Type of Marie, but much slower in progress than Case 3, and without total disability.) D. A. H. A man of sixty-five, with negligible family history and no relevant personal history, began at the age of thirty to notice poor control of his feet, with frequent stumbling.

Neurological examination gave the following: Strength and endurance were much reduced; slight diplopia in the primary position and on looking up; a marked constriction of the fields of vision; marked nystagmus; speech difficult, thick, indistinct; wasting of all muscles, worse about the shoulder girdles; absent abdominal reflexes, but diminished tendo Achilles jerks; occasional cramps in the calves of the legs and a slow clumsy ataxia of the trunk muscles and hypermetria of the lower extremities with a reeling cerebellar gait. There were no pathological reflexes present and no sensory disturbances.

This case had progressed slowly without remission for at least thirty-five years and this was the strongest evidence that it was not one of multicple sclerosis of the cerebellar type.

* * *

Case 5. (Type resembling multiple sclerosis.) M. J. A man of thirty-four years was brought for progressive stiffness and weakness with staggering and difficulty in walking. Patient was an orphan and knew no family history or early personal history.

He stated that his trouble began at the age of twenty-six with insidious onset of uncertainty of the feet and a little staggering. After a time he had occasional falls because his feet dragged and caught in the carpet, doorsteps, etc. He never complained of any disability. When he was thirty-two, changes in his speech became constant. He was hardly able to make himself understood when he was self-conscious. A year later he noticed his hands getting clumsy and shaky; it was difficult for him to feed himself. He jerked often and very suddenly during sleep. One leg jerked violently at times. A Wassermann test had been taken, but had been reported negative.

Neurological examination gave the following information. There was an occasional slight diplopia and marked nystagmus on lateral fixation and on looking upwards. The fundi were negative, but there were constrictions of the fields of vision and relative scotomata. He had quite a dysarthria, especially for labials and linguals. A tremor of the tongue was present. Abdominal and cremasteric reflexes were lively. The right diaphragm did not move freely. There were frequent oscillations about the thighs. The deep reflexes of the lower limbs were much increased and occasional cramps in the calves of the legs were present. A dying clonus was present in both ankles. The gait was slow, unsteady and staggering, and he fell frequently, mostly backward. There was no real spasticity in the lower extremities. The spinal fluid was negative in every way.

It is readily seen that a differentiation from multiple sclerosis was not easy. The pathology was not that of sharply defined patches like multiple sclerosis, yet there was multiple involvement in the sense that many tracts were partially degenerated.

* * *

Case 6. (Type of Degerine and Thomas. Not hereditary or familial.) W. A. B., age sixty, with a clear family history and an irrelevant personal history up to seventeen months prior to our first examination. At that time he slipped on an icy stairway, grasped a banister and wrenched his back severely. After resting for some hours he went to his work and cntinued this for three weeks. He then began to lose control of his legs and would fall if he turned quickly.

Four weeks after the accident he decided to go to a hospital. To be taken there he walked down four flights of stairs without unusual difficulty, was taken

to the hospital, but on arriving there he became acutely ill. The left leg became stiff, then jerked up in a flexion posture on the abdomen and gave severe pain in the hip joint. Doctors made a spinal puncture, but found nothing of help in diagnosis. Death within forty-eight hours was predicted. The abdomen bloated badly.

He remained in the hospital ten weeks, gradually becoming able to walk a little, when he had another attack of severe pain in the left leg. It was a little over a year after this episode that he first came under the observation of the writers.

A neurological examination gave the following information: There was slight diplopia on looking at distant objects. A vertical nystagmus in all positions and a rotary nystagmus on looking up were present. The left frontalis was drawn up continuously. The speech was jerky, ataxic, explosive. A clumsy ataxia of the neck muscles kept the head moving unless it was supported. A coarse tremor of the hands and hypermetria of the right hand were present. Adiadokokinesis was marked. The epigastric reflexes were not obtained. Hypermetria of the feet was present, and in harmony with this a reeling ataxic gait with so little effectual balance that falls occurred frequently unless another supported the patient. During locomotion or sitting without support to the trunk, a clumsy, slow titubation of the trunk muscles occurred. Spinal fluid was entirely negative.

This patient a year later received a very mild electric shock to the muscles of the lower extremities. The left leg was jerked up, and because of the total absence of synergy between the protagonists and antagonists the femur was fractured. In spite of all this he believed he was improving.

The diagnosis in this case was difficult, mostly because of the bizarre history. The actual relation between trauma and the onset of these conditions is not easy to evaluate. We are inclined to believe that there was no relation between the two since the patient felt well and worked for three weeks after the accident before he became ill. Such spasms of the limbs as occurred are not unknown, but are uncommon.

The pathology is that of an olive-ponto-cerebellar atrophy. Yet even here the circumscription is not absolute.

SUMMARY

The writers note a few points demonstrated by these cases which are valuable diagnostically.

1. Although optic atrophy may not have progressed to the stage of being visible in the eye grounds, a field of vision carefully plotted will often show a marked concentric contraction. This should militate against a diagnosis of multiple sclerosis.

2. The cerebrospinal fluid is usually negative in these cases. When it is abnormal, the only abnormality found is generally that of a colloidal gold curve.

3. These patients suffer a slowly but steadily progressive ailment which should aid in ruling out multiple sclerosis. But as a class they are optimistic and claim improvement when it does not occur, and hence mislead the physician.

4. The age of onset as given by the patient is usually actually much earlier than stated. Unless the history is taken from relatives or close friends, a wrong conception is often obtained because the onset is so insidious.

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THE LURE OF MEDICAL HISTORY

GALEN: GREEK, MEDIEVALIST AND MODERN*

PART II

By SANFORD V. LARKEY, M. D.
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SOME of Galen's most striking experiments on the nervous system are concerned with the production of the voice and respiration. In describing the anatomy of the recurrent laryngeal nerve, he compares its action to that of the glossokomion, a device for reducing fractures. In this, pull is exerted in opposite directions by having one set of ropes run around a pulley. He says: "This double course nature thought of before man . . . for the nerve descending across the neck to a part of the thorax, . . . mounts again from there to the larynx, where the nerves insert themselves into the muscles in question. Each of these six muscles is drawn down as if by hand." He very dramatically demonstrated its action in a living animal by cutting the nerve while the pig was squealing. The animal instantly stopped squealing. Galen often gave his demonstrations before large crowds and had a fondness for the theatrical.

His work on section of the spinal cord was fundamental. He says: "If one cuts one of the lateral halves (of the cord) obliquely or transversely, sensation and movement are destroyed on the same side and below the section, the animal is half motionless. He is completely motionless when the division of the cord is complete. . . . If one cuts the cord between the first and second vertebrae the animal perishes immediately. Between the third and fourth, respiration is abolished and the entire trunk and limbs are motionless and insensible. . . . Between the seventh and eighth . . . the animal breathes then only with the diaphragm, as it does when it has no need of great respiratory effort; for if it has run, if it is agitated by fever, or overcome by heat, the diaphragm is powerfully aided by the six superior muscles, by the intercostals, and by those of the abdomen. . . . If, then, one cuts the trunk of the phrenic nerve, or each of its roots one after the other, the superior muscles come into violent action, and accomplish themselves the act of respiration." He then shows the results when the nerves to the other accessory muscles are cut.

His experiments on the action of the kidneys and ureters also show careful operative technique and accurate observation.

"The fact is that those who are enslaved to their sects are not merely devoid of all sound knowledge, but they will not even stop to learn! Instead of listening, as they ought, to the reason why liquid can enter the bladder through the ureters, but is unable

* From the department of medical history and bibliography, University of California Medical School.

* Read before the Alameda County Medical Society, February 16, 1931.

* For Part I, see April 1931 issue of California and Western Medicine, page 271.

Fig. 4.—Galen demonstrating the function of the recurrent laryngeal nerve.

to go back again the same way—instead of admiring Nature's artistic skill—they refuse to learn; they even go so far as to scoff, and maintain that the kidneys, as well as many other things, have been made by Nature *for no purpose!*

* * *

"Now the method of demonstration is as follows: One has to divide the peritoneum in front of the ureters, then secure these with ligatures, and next, having bandaged up the animal, let him go (for he will not continue to urinate). After this one loosens the external bandages and shows the bladder empty and the ureters quite full and distended—in fact almost on the point of rupturing; on removing the ligature from them, one then plainly sees the bladder becoming filled with urine.

"When this has been made quite clear, then, before the animal urinates, one has to tie a ligature round his penis and to squeeze the bladder all over; still nothing goes back through the ureters to the kidneys. Here, then, it becomes obvious that not only in a dead animal, but in one which is still living, the ureters are prevented from receiving back the urine from the bladder. These observations having been made, one now loosens the ligature from the animal's penis and allows him to urinate, then again ligatures one of the ureters and leaves the other to discharge into the bladder. Allowing, then, some time to elapse, one now demonstrates that the ureter which was ligatured is obviously full and distended on the side next to the kidneys, while the other one—that from which the ligature had been taken—is itself flaccid, but has filled the bladder with urine. Then, again, one must divide the full ureter, and demonstrate how the urine spurts out of it, like blood in the operation of venesection; and after this one cuts through the other also, and both being thus divided, one bandages up the animal externally. Then when enough time seems to have elapsed, one takes off the bandages; the bladder will now be found empty, and the whole region between the intestines and the peritoneum full of urine, as if the animal were suffering from dropsy. Now, if anyone will but test this for himself on an animal, I think he will strongly condemn the rashness of Asclepiades, and if he also learns the reason why nothing regurgitates from the bladder into the ureters, I think he will be persuaded by this also of the forethought and art shown by Nature in relation to animals." [2]

While Galen's therapeutics is chiefly famous for its polypharmacy, his name still surviving in our "Galenicals," he was a really great physician. A true follower of Hippocrates, he considered the patient as an individual, basing his treatment on careful diagnosis. He relied greatly on the healing power of nature, and placed stress on hygiene, rest, diet, and exercise. The following description of cases, while differing from the simple, concise histories of Hippocrates, will show something of his method. They also give many insights of his character, his conceit and contentious nature.

"I was called in to see a woman who was stated to be sleepless at night and to lie tossing about from one position into another. Finding she had no fever, I made a detailed inquiry into everything that had happened to her, especially considering such factors as we know to cause insomnia. But she either answered little or nothing at all, as if to show that it was useless to question her. Finally, she turned away, hiding herself completely by throwing the bedclothes over her whole body, and laying her head on another small pillow as if desiring sleep.

Fig. 5.—Galen and the woman who was in love with Pylades.

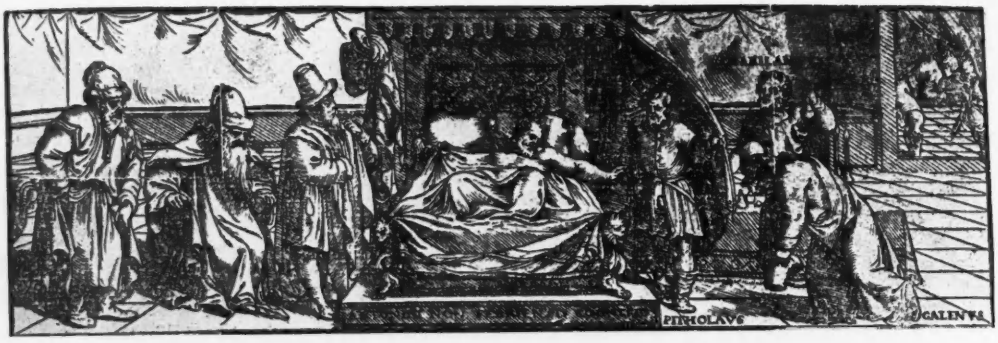

Fig. 6.—Galen is called to treat the Emperor, Marcus Aurelius.

"After I had diagnosed that there was no bodily trouble, and that the woman was suffering from some mental uneasiness, it happened that, at the very time I was examining her, this was confirmed. Somebody came from the theater and said he had seen Pylades dancing. Then both her expression and the colour of her face changed. Seeing this, I applied my hand to her wrist, and noticed that her pulse had suddenly become extremely irregular. This kind of pulse indicates that the mind is disturbed; thus it occurs also in people who are disputing over any subject. So on the next day I said to one of my followers, that, when I paid my visit to the woman, he was to come a little later and announce to me, 'Morphus is dancing to-day.' When he said this, I found that the pulse was unaffected. Similarly also on the next day, when I had an announcement made about the third member of the troupe, the pulse remained unchanged as before. On the fourth evening I kept very careful watch when it was announced that Pylades was dancing, and I noticed that the pulse was very much disturbed. Thus I found out that the woman was in love with Pylades, and by careful watch on the succeeding days my discovery was confirmed."

* * *

"What happened in the case of the Emperor himself was really wonderful. His own opinion and that of the physicians of his entourage who had gone abroad with him was that some febrile paroxysm had begun. But they all proved wrong both on the second and third day, in the morning and at the third hour. He had on the preceding day taken a draught of bitter aloes at the first hour, and then some theriac as was his daily custom. Next he took some food about the sixth hour, washed at sunset, and had a small meal. During the whole night there ensued colicky pains with intestinal evacuations. This made him feverish, and when his attendant physicians observed this, they gave orders that he should be kept quiet; then they prescribed slop diet at the ninth hour. After this I was myself also summoned to come and sleep in the Palace. Then, when the lamps were newly lit, a messenger came to call me at the Emperor's bidding. Three doctors had been observing him since about daybreak, and two of them feeling his pulse, and they all considered this the beginning of a febrile attack. I stood by, however, without saying anything; so the Emperor, looking at me first, asked why, when the others felt his pulse, I alone did not do so. I said to him, 'Two of these gentlemen have already done this, and probably when they were abroad with you they already learned by experience the characteristics of your pulse; hence I expect they will be better able to judge its present condition.' On my saying this he bade me also feel his pulse. It seemed to me that, taking his age and constitution into account, the pulse was far from indicating the beginning of a febrile attack. I declared that this was no onset of fever, but that his stomach was overloaded by the food he had taken, which had turned to phlegm prior to ejection.

"My diagnosis seemed praiseworthy to the Emperor, and he repeated three times in succession: 'That's it. It is just what you say. I feel I have taken too much cold food.' And he asked what was to be done. I answered what I knew, and said to him: 'If it were anyone else who was in this state, I should follow my custom and give him wine sprinkled with pepper. But in the case of kings like yourself, physicians are in the habit of giving safer remedies; hence it will be enough to apply over your stomach some wool impregnated with warm spikenard ointment.' The Emperor said that in any case when his stomach was out of order he was in the habit of applying warm spikenard ointment enveloped in purple wool. So he gave orders to Pitholaus to do this, and to let me go. When this application had been made, and his feet thoroughly heated by rubbing with the warm hand, he asked for some Sabine wine, sprinkled pepper in it, and drank. He then declared to Pitholaus that he had 'one physician, and he was a perfect gentleman.' Further, as you know, he keeps constantly saying about me that I am 'first among the physicians and alone among the philosophers.' For he had already had experience of many who were not only mercenary, but also quarrelsome, conceited, selfish, and malicious. . . . "

* * *

"Thus another case was that of an individual who stated that he was suffering extreme pain in his knee. He was one of those slaves who run alongside their masters in the streets. I observed that there was some pretence in this pain, my suspicions being aroused partly by the fact that the master was leaving town that day, and partly also by the young man's character, as he was just the sort of man to tell lies of this kind. I therefore asked one of his fellow-slaves who knew him well whether the young fellow was in love with any young woman, on whose account he was likely to wish to remain at home when his master was starting for a somewhat long journey. And it was so.

"Such matters, then, are resolved by external considerations. On the knee itself, however, was an extensive swelling, which might have alarmed a layman, but which to the expert in these matters had obviously been produced by *thapsia* (a substance like mustard). Such a conclusion is the result of medical experience, and not one of those arrived at by external considerations. Also belonging to medical experience was the recognition that nothing had lately happened to him which could have suddenly brought about such a swelling. He had not been running overmuch, he had not been struck by anybody, he had not hurt himself by leaping or jumping over ditches. . . . Further, when I asked him what the pain was like, he did not give quick, ready, or consistent answers. Hence, when his master had left, I

applied a drug which, while possessing no anodyne quality, was adapted by virtue of its chilling action for removing the condition produced by thapsia. After one hour I had him confessing that he had absolutely no pain, whereas, if the pain had actually come from inflammation, it would not merely not have been checked but actually made more severe by a cooling application."[1]

In all of his writings Galen appears as a very real person and seems much closer to us than Hippocrates. While we may not always agree with him, we cannot help liking him. In closing I will quote Charles Daremberg: "To appreciate the achievements of Galen, we must realize that it was practically impossible to go much further in science in the age in which he lived."

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CLINICAL NOTES AND CASE REPORTS

STOMATITIS APHTHOSA WITH SYSTEMIC COMPLICATIONS

REPORT OF CASE

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THE etiology and pathogenesis of stomatitis aphthosa are still obscure.

REVIEW OF LITERATURE

O. Ganss[1] described the observations of his experimental works on guinea pigs, and came to the conclusion that stomatitis aphthosa is possibly due to a mixed infection.

B. Peiser[2] compared his own experiments on rats with those of Ganss' and obtained similar results without any definite conclusions.

Phillip Varney[3] quotes Keilty (1922), who on examining the gums of two hundred patients, found fusiform bacilli and spirochetes in almost every case. McKinstry (1917) found organisms similar to fusiform bacilli and spirochetes in the mouths of 95 out of 230 healthy recruits during the war. Brams and Pilot (1923), Tunniclift (1923), and others have observed them in the normal tonsils.

A wavy type of fusiform bacillus has been isolated in which may be found spiral-like forms, so closely resembling true spirilla at certain stages of their growth, as to lead to confusing these spiral forms, which are *nonmotile and are present only for a short period of time,* with true spirilla to which they have no relationship.

J. Gerstenberger[4] states that the administration of water soluble vitamin B produces in herpetic stomatitis, aphthous stomatitis, herpes labialis, acute gingivitis, and ulcerative stomatitis a remarkably rapid improvement and recovery. Thirteen children and one adult in whom these conditions appeared either singly or in combination were well nourished and partook liberally of food until the stomatitis appeared. It is suggested that the primary etiologic factor in these cases is metabolic and nutritional and that any rôle that bacteria or similar agents may play is secondary.

J. W. Auld[5] states that the latent pathogenic bacteria which are usually present in the mouth and throat are able, because of added virulency, to invade the host whose resistance has been lowered. A variety of unhealthy conditions may arise from stasis of the intestinal contents. It is the opinion of many authorities on the subject, that pathogenic micro-organisms in the intestinal canal which remain there as infectious organisms, gain their entrance chiefly by swallowing infectious material from the mouth, throat, nose and through infected food.

J. Basch[6] presumes that Aphthenkrankheit is probably due to a certain predisposition and bacteria; the latter play a secondary role as a harmless permanent flora of the mouth of the host. Under certain circumstances producing a predisposition, conditions become pathogenic and an eruption involves the mucous membrane of the mouth perhaps as a phenomenon of a certain allergy. E. Flusser[7] claims that stomatitis aphthosa is a genuine acute infectious disease, the cause of which is unknown.

REPORT OF CASE

F. K., a Jewish boy, fifteen years old, well nourished and normally developed. Had mumps a few years ago. The family history was negative. The patient was an inmate of an orphans' home (Vista Del Mar, Palms, California). The board, rooming, and hygienic conditions were highly satisfactory; he was one of the healthiest and cleanest among the hundred inmates. He took sick suddenly on April 27, 1927, complaining of headache, sore throat and sore gums, with a temperature 101.2 and pulse of 100.

Examination revealed: lungs, heart, and abdomen negative; tonsils and gums showed redness. Next morning, April 28, the throat and tonsils became highly inflamed and dotted with whitish-yellow plug-like deposits the size of a pin-head; single minute shallow ulcerations were scattered over the lining of the mouth. The tongue was slightly coated. The gums appeared inflamed and swollen and discharged a seropurulent fluid. The submaxillary and cervical lymphatic glands became enlarged (the size of a pigeon egg) and painful. Temperature rose to 102.2 degrees; pulse, 104. Urinalysis gave negative results. Bacterioscopic examinations of the deposits of the tonsils and the discharge from the gums revealed diplococci, staphylococci, and ***numerous spirochetes.***

On April 29 a crop of small vesicles, less than a pin-head in size, yellowish-gray with a red circle around them, appeared on the hard and soft palate and on the lingual and buccal aspects of the gums; the gums became more puffed and very loose. A slightly fetid odor appeared. A moderate diarrhea occurred. Repeated microscopic examinations of the discharge from the gums and vesicles revealed diplo-

cocci and staphylococci. The spirochetes disappeared, following use of mouth wash and gargle of three per cent solution potassium chlorate. The patient appeared ill. Gradually the condition improved, becoming almost normal. On May 4 the swelling of the glands subsided, stools seemingly normal, the patient felt well and appeared fully recovered. But the same day, late in the afternoon, the stools became frequent and watery and filled with ribbon-like strips of mucus. Following medication, the bowel movements again became normal the next day. Twenty-four hours after, diarrhea ensued and a giant urticaria appeared on both legs. In forty-eight hours, the same eruption showed up on the face and here and there on the trunk. The papillae of the upper gums again became swollen, their edges ragged. This giant urticaria lasted five days during which time the eruption in the mouth almost disappeared, except for the papillae of the upper gums in the region of the central incisors. These were slightly puffed, cyanotic and macerated on the palatal aspect. In a few days the boy recovered entirely and has had no relapses since.

CONCLUSIONS

Stomatitis aphthosa with systemic conditions is not frequently encountered. In this case it was striking to see a sudden severe development of the disease in a strong and healthy boy despite the satisfactory mode of living; and to note the numerous spirochetes in the discharge from the gums and vesicles of the mouth. The general malaise, temperature, the enlarged and painful cervical lymphatic glands, highly inflamed loose gums almost detached from the alveolar ridge, which were discharging a seropurulent fluid; moderate diarrhea on the second day of the onset of the disease, showed that the absorption from the mouth had begun at once.

Seeking for the cause of the disease we were compelled to reject the idea that it was due to the spirochetosis, because following administration of three per cent solution of potassium chlorate, all spirochetes disappeared in twenty-four hours and repeated examinations of the smears revealed diplococci and staphylococci only. Fungi and yeasts were never found.

Varney,[3] who quotes a number of authors, states that fusiform bacilli and spirochetes may be found in normal tonsils and certain spiral-like forms can be found in the mouth for a short length of time.

In accordance with Gerstenberger[4] we presume that the metabolic and nutritional factors might have played a certain rôle in this case, therefore from the very beginning we considered the case not only from the standpoint of an infection, but of an avitaminosis or vitamin deficiency disease, as scurvy. Accordingly, the treatment was partially carried out along these lines.

Some symptoms of this case may be considered as a result of a certain predisposition, which, according to Basch,[6] produced the vesicular eruption in the mouth. A few days later, while the patient's condition had markedly improved and all visible symptoms seemed almost vanished, suddenly diarrhea with ribbon-like mucous strips occurred and in forty-eight hours afterwards a giant urticaria followed. These manifestations may be regarded as a phenomenon of the same allergy as that which produced the eruption in the mouth. How else can these systemic symptoms be explained? Together with Auld[5] we can believe that the pathogenic flora of the intestines become activated by the swallowed infectious material from the mouth, throat, and nose or because the pathogenic material from the mouth was very toxic and absorption began at once, making an entirely healthy boy ill within twenty-four hours. What kind of an infection could produce such a toxic condition?

Because of certain circumstances we could not make cultures and inoculations to animals. We were forced to remain satisfied with the results of bacterioscopic examinations, which detected only diplo- and staphylococci. As very few articles on stomatitis aphthosa were found and no cases with systemic symptoms like those above described, it is assumed that this case might be of interest to those studying aphthous stomatitis.

TREATMENT

Treatment was carried out along three lines:

First, physics such as milk of magnesia and copious drinks to eliminate the infection were given as soon as possible.

Second, local symptomatic treatment was applied, such as Prissnitz's compresses to the neck, mouth wash and gargle with three per cent solution of potassium chlorate and a lotion of potassium permanganate 1:4000. The mucous membrane of the mouth was painted with mild solution of silver nitrate, and later with a solution of two per cent mercurochrome.

Third, considering the condition of the gums as scurvy-like we administered orange juice in liberal quantities. The general diet first consisted of broth, milk, cocoa, jello, soft cereals, gradually increased to a regular diet, with the addition of orange juice. During the exacerbation of diarrhea, milk of magnesia was administered again; later salol and bismuth subnitrate.

610 South Broadway.

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FOREIGN BODY IN THE ESOPHAGUS FOR THREE YEARS*

By A. LINCOLN BROWN, M. D.
San Francisco

IT is not at all unusual for a foreign body to be swallowed and become lodged in the esophagus. It is, however, very unusual for such a foreign body to remain lodged for a period of years and, as in the present instance, for practically the entire previous life of the individual concerned. The following case is of interest, then, both because of the length of time the foreign body remained in the esophagus and by reason of the technical measures adopted for its removal.

REPORT OF CASE

University of California Hospital Number 78290. Admitted September 30, 1930.

The patient was a male child of about 3 years of age. When he was about 3 months old he was noted to have aspirated or swallowed a small metal ring about the size of a five-cent piece. Nothing was done about this, although shortly thereafter the baby began to cough and was taken to a physician to be treated for a "cold." For the next three years the patient suffered from intermittent seizures of coughing, followed by short periods of freedom from cough. During these periods of cough, great difficulty was experienced in feeding any bulky foods. The child's development progressed fairly well, aside from this cough, until three weeks before the present entry, at which time the cough increased. He became weak, irritable, lost weight and refused to eat. He was taken to Doctor Callahay, of Madera, who took an x-ray of the patient's chest, which showed a foreign body in the region of the esophagus at the sternal level. The patient was then sent to the University of California Hospital for the removal of this foreign body. Aside from the present illness, the family history and the past history are essentially negative.

Physical Examination.—The child was an undernourished Mexican baby, very irritable, who cried continuously. He had a constant hard, croupy cough. The skin was warm, brown and dry. The mucous membranes were slightly pale. A small submaxillary node was palpable on the left side. The head was normal, except for slight enlargements of the parietal bossae; eyes normal. There was slight discharge from both ears. The teeth seemed in good condition. The nasal pharynx was moderately injected and there was marked enlargement of both tonsils, especially on the left. The trachea was in the midline. The thorax showed slight lateral flaring of the rib cage. Both sides moved equally on respiration. The lungs were resonant throughout; no râles were heard, but there was a harsh tracheal inspiratory note. The heart was within normal limits to percussion, sounds of good quality and no murmurs audible. The abdomen and extremities were essentially negative. The back showed slight lateral scoliosis to the left.

Laboratory and X-ray Findings.—Urine: Albumin negative. Sugar, faint reduction. Acid reaction. Microscopically: Much amorphous urates. Occasional pus cells.

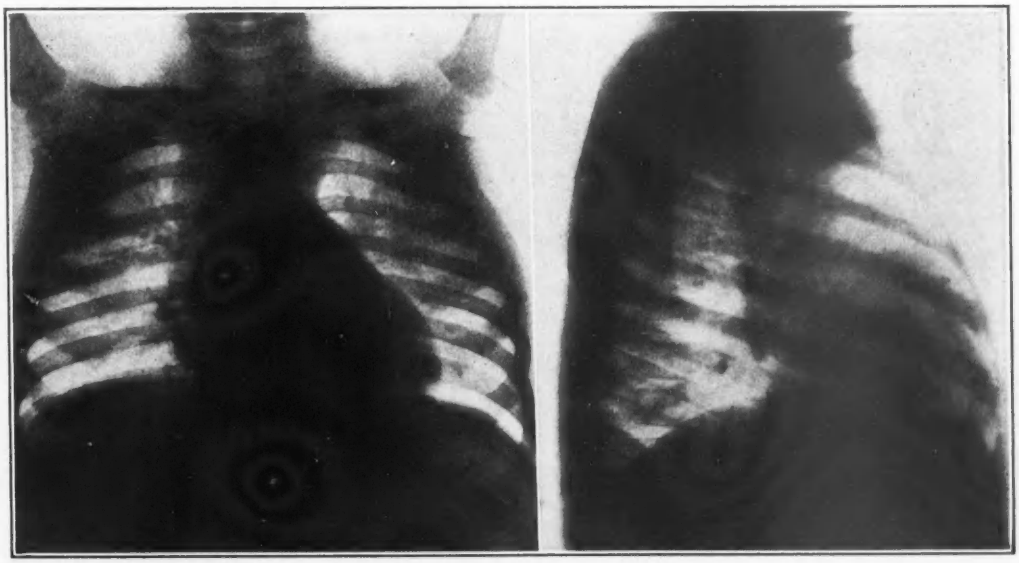
Blood: Hemoglobin, 75 per cent; red blood cells, 3,600,000; white blood cells, 14,000; polymorphonuclears, 46 per cent; lymphocytes, 45 per cent; PME, 2 per cent; mononuclears, 7 per cent.

Roentgen Ray Report on October 2, 1930.

Showed a metallic body of the shape of a washer about one inch in diameter lying in the esophagus almost behind the manubrium sterni. There was considerable widening of the mediastinal shadow in this region, suggestive of mediastinitis. The trachea appeared to be somewhat narrow at the level of the lower edge of the foreign body.

As the diagnosis of a foreign body in the esophagus was considered certain and as a low grade mediastinits appeared to be developing, immediate bronchoscopy was decided upon. This was done under open anesthesia.

Procedure.—A ten millimeter Brünings esophagoscope was inserted without difficulty. At a distance of twenty-five centimeters a corroded metal ring partially embedded in hypertrophied mucous membrane was seen. This was grasped with a hook and drawn



Figs. 1 and 2.—Anteroposterior and lateral views showing the foreign body (iron washer) in the esophagus in a transverse position about the level of the aortic arch. Marked widening of the mediastinal shadow is to be noted.

* From the Department of Surgery, Division of Thoracic Surgery, University of California Medical School, San Francisco. The J. J. and Nettie Mack Foundation.

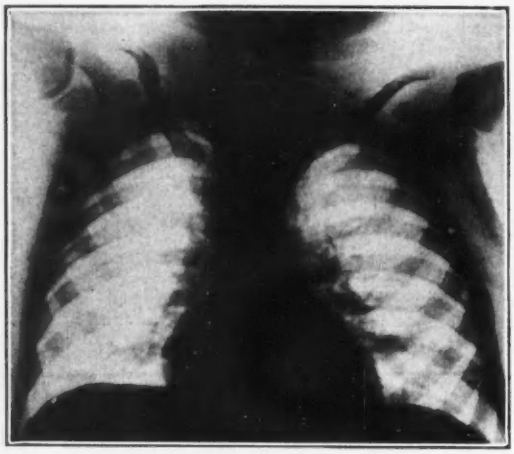


Fig. 3.—One week after the removal of the foreign body. Shows the mediastinal shadow decreased to its normal size, apparently by absorption of the inflammatory process.

in direct contact with the beveled end of the esophagoscope, so that only about one millimeter projected on each side of the esophagoscope. It was slowly withdrawn and a few streaks of blood noted. The ring appeared to lie diagonally across the esophagus, so that whatever food passed down the esophagus was obliged to pass through the hole in the ring. The entire mucous membrane was noted to be markedly hypertrophied and inflamed. The actual extraction was accomplished by grasping the far edge of the inside of the ring, thereby centering the ring over the beveled edge of the esophagoscope. (See Fig. No. 4.) Thus if the ring had been grasped at its proximal end, about one-half of its diameter would have protruded beyond the esophagoscope and would therefore have acted as a knife edge on extraction.

The postoperative course was uneventful. Roentgen rays taken about a week after the removal of the foreign body shows the mediastinal reaction to have diminished remarkably (Compare Figs. No. 1 and No. 3).

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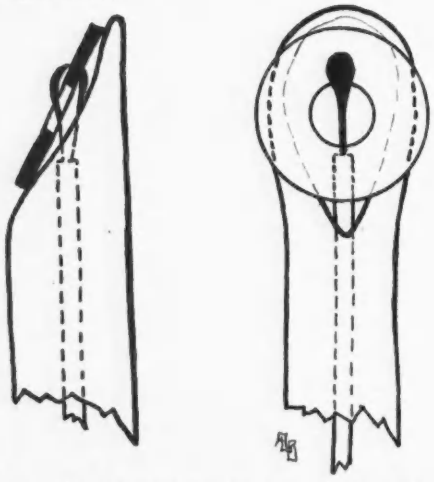

Fig. 4.—Diagrammatic representation of the method of extraction employed, showing how, by grasping the metal ring through the hole in its center, practically the entire foreign body was covered by the end of the esophagoscope. Withdrawal of the esophagoscope and the foreign body was done as a unit, thereby producing a minimum of trauma.

New State Health Program Bill Introduced Into Legislature.—A bill providing a new health program for New York State was introduced into the legislature on Monday, February 23. This bill embodies the major recommendations of the New York State Health Commission, whose preliminary report was transmitted to the legislature with a special message from Governor Roosevelt on February 19. The report was reviewed in the February 16 issue of *Health News*.

The principal provisions of the bill are:

"Each county shall establish a county health district and appoint a county board of health to provide for the rural areas and the villages in order more effectively to control tuberculosis, the venereal diseases, and other communicable diseases; to protect maternity and infancy; to safeguard public water and milk supplies; to secure more effective public health nursing service, and other essentials of a modern public health program.

"Each county board of health shall appoint a county health commissioner who shall devote his entire time to the duties of his office. In county health districts which have a population of less than thirty thousand such county boards of health may designate, with the approval of the state commissioner of health, a district state health officer to act as county health commissioner without additional compensation and whose appointment as such county health commissioner shall terminate upon the appointment of a county health commissioner.

"Local health officers now in office shall continue as deputies of the county health commissioner for the term for which they previously had been appointed, and thereafter at the discretion of the county board of health.

"Cities are not included within the county health district and will retain their boards of health and health officers unless the city elects by appropriate action to become a part of the county health unit and the board of supervisors concurs.

"The effective date for the appointment of county boards of health is set not later than September 1, 1931, and the appointment of county health commissioners not later than December 1, 1931.

"The county health commissioner shall within the county health district possess all the powers conferred upon and perform all the duties required of local health officers and shall have authority to investigate and abate public nuisances which may affect health."

The public health law, Article II-B, provides state aid to counties engaged in public health work; consequently upon the establishment of the county health district the state, pursuant to provisions of said act, will reimburse the county for one-half of moneys expended in public health work. The county is the only unit to which state aid is given; consequently the county will be able to do much more public health work through the county board of health and receive reimbursement as above indicated.—*Health News*, March 9, 1931.

New Hampshire's Unemployment Aid for Mothers. The first bill signed this year by the Governor of New Hampshire made $75,000 immediately available during the first four months of the year to assist mothers and children affected by unemployment. This augments the state's current appropriation of $45,000 for mothers' aid. It is to be used to care without delay for waiting applicants and to extend aid to mothers and their children rendered temporarily dependent by the unemployment either of the mother or of the person upon whom she usually depends. The law stipulates that the aid given by this fund is not to replace that of county, city, or town, but may supplement it. The Governor and the State Board of Education are made jointly responsible with the State Board of Public Welfare for administration of the fund.—*U. S. Children's Bureau*, Washington, D. C.

BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

An Open Forum for brief discussions of the workaday problems of the bedside doctor. Suggestions for subjects for discussion invited.

SURGERY OF THE INFANT ABDOMEN

JOHN HOMER WOOLSEY, SAN FRANCISCO.—Surgery of infants today has a decreased mortality over that of ten years ago due chiefly to the wiser attention paid to the patient's general care. Judicious attention to the patient as regards fluid intake and output; light and short anesthesia; limited and definite surgical procedures; and gentleness in handling and protection to the tissues, permits surgery that previously one would not consider. For these reasons one can today recommend surgical repair for inguinal hernia in infants where heretofore a most conservative opinion ruled.

INGUINAL HERNIA

Inguinal hernia in infants has been estimated to occur in variable degrees, but five to seven per cent seems the average. Of these approximately five-tenths per cent develop some complication in infancy or childhood. Coley reported that out of fifteen thousand cases of adult inguinal hernias one-third existed in childhood. In addition, it is a rather general opinion that the majority of oblique inguinal hernias are due to a congenital weakness. If accurate statistics were kept, I believe it would be shown that the majority of inguinal hernias that are present in early infancy, but disappear with, or without, treatment, recur later in adult life.

In the treatment the use of pressure bandages such as adhesive, the yarn truss, or the mechanical truss, have yielded actually and solely but few, if any, complete obliterations of the patent funicular process. Personally, I have never witnessed any direct value from their use. The keeping of the child in a healthy state of tissue growth and a contented humor does more, for it allows a continuous approximation of the walls of the funicular process. This approximation is necessary if the apposing surfaces of the hernial sac are to heal or unite. Inguinal hernias in infancy at times have been observed, for some reason not accurately explained, to disappear and to remain so. It is possible for this phenomenon to occur during the first three months, and it may happen at even a greater age. However, it is doubtful if it occurs after six months, and so a period of six months is arbitrarily set before surgical correction is recommended.

Surgical correction of inguinal hernia in infants consists primarily in a high ligation and obliteration of the sac. The closure of the internal oblique and conjoined tendon to the inguinal ligament is advisable but not compulsory, for the defect is not in the muscle wall. It is in the failure of the funicular process of the peritoneum to close. Transplantation of the cord is unnecessary and unwise at this early age.

Strangulated, incarcerated, and recurring inguinal hernias with intra-abdominal strain are already recognized as needing surgical repair. The other inguinal hernias of the infant that exist after the age of six months should be repaired surgically early in life—preferably by the age of eighteen months.

* * *

APPENDICITIS IN INFANCY

CHARLES M. FOX, SAN DIEGO.—The last few years have seen a marked improvement in the results of the treatment of appendicitis in infancy, due to earlier diagnosis. Until recently the subject has usually been dismissed with a statement something like the following:

"Appendicitis in infancy is not very common and the diagnosis is difficult. Most cases are not operated upon until the appendix has ruptured, and in many instances the diagnosis is made at autopsy."

This is still true in fact, but thanks largely to the pediatricians we now not infrequently see these patients early, that is, before rupture. The trained infant specialist, accustomed to seeing all sorts of acute illnesses, will much more quickly recognize the unusual condition at a glance. If one waits for the classic picture, most cases will be overlooked.

Perforation occurs in a greater percentage of cases than in adults, though this percentage is being materially lessened by earlier diagnoses. Once perforation occurs, the mortality becomes definitely higher than in adults under the same circumstances.

Reviewing briefly the symptoms, the first we have to consider is pain. The location of the pain is variable. I have several times had a child of two years of age refer the pain to the back. In an infant, of course, all we know is that there is a pain somewhere. Pain does not seem to be so constant as in adults. I have occasionally seen a free interval of an hour or two at a time with an acutely inflamed appendix.

Nausea and vomiting, so common to almost any upset in an infant, are suggestive when it is observed that vomiting has no apparent effect on the pain or apparent distress.

The temperature is usually elevated, but does not often go above 101 or 102.

The pulse varies. In general a very rapid pulse indicates a high grade of toxemia.

Tenderness and rigidity are by long odds the most important finding. It is, however, at times

very difficult to determine their presence, and physicians who care for and understand infants and young children can frequently elicit this sign much more rapidly than others, due to the cooperation of the patient. If the appendix is retrocecal, deep palpation may be necessary before pain is caused. The presence of tenderness and rigidity in a suspicious case is enough to justify operation.

Rectal examination in an infant is of value if there is an abscess, but as an indication of early tenderness it is not often useful since the discomfort of the examination itself is considerable.

The blood count usually varies from 7000 to 15,000 plus, and the polynuclear cells from 70 to 90 per cent. A white count of 15,000 practically always means pus.

An acute attack is sometimes followed by the passage of considerable mucus for a few days, making one believe that he has been dealing with a colitis, which condition, however, rarely occurs in infants, except with dysentery. In one such case I made this diagnosis twice, and refused to operate, against the judgment of the pediatrician who was caring for the child, only to remove a ruptured appendix during the third attack. The treatment is practically the same as in adults—immediate operation before rupture, operation after abscess formation being done according to the condition of the individual case. Occasionally after operating on a fairly typical case with relatively mild but definite symptoms, an appendix but little inflamed will be found, associated with many enlarged mesenteric glands, the symptoms in this instance, of course, being due to the glands. Incidentally, these patients run a temperature for several days after operation.

I have said nothing about differential diagnosis, which must be made from acute illnesses with abdominal pain and distention. I was once asked to operate on a child of eighteen months, and found a typical scarlet fever rash present.

Acute respiratory infection must be ruled out as well as acute pyelitis. I believe that in these cases of suspected appendicitis the surgeon should at times take the judgment of the pediatrician rather than trust to his own. My experience has justified this procedure more than once.

* * *

PYLORIC STENOSIS IN INFANTS

GUY COCHRAN, LOS ANGELES.—Nothing in the surgery of children can be more depressing than the three weeks old baby who weighed eight or nine pounds at birth and now weighs five pounds (those who have lost 20 per cent or over of body weight are bad risks)—the cry of starvation is like nothing else; the loose folds of skin on his body (for three to one are males) are pathetic as of a wrinkled, old man; the projectile vomiting is tragic in its exhaustion.

Before operation the baby has been given fluids; on the table his body is surrounded by cotton packs; a general anesthetic is used. Through an upper right rectus incision three centimeters in length the tumor is located and with a rubber-covered hook it is brought outside the abdomen; an artery clamp is placed on the abdominal wall underneath the tumor mass to hold it in position. A longitudinal incision is made the length of the tumor. This is deepened by spreading with a small artery clamp, and this blunt dissection is carried on until the mucosa appears below. Every fiber must be broken, for we have had one recurrence of symptoms and on secondary operation found three small threads of fiber which had been left. This blunt dissection must be done with most extreme care, for at the gastric end there is much thickening from edema while at the duodenal end the tumor thins out rapidly and bleeds easily. If bleeding occurs, it is not possible to clamp the bleeder without tearing a hole into the duodenum with leakage and subsequent peritonitis, so we have closed our tumor incision to stop bleeding by pressure and started all over again. Sufficient width of tumor tissue must be removed to allow the mucosa to bulge into the entire length of the incision.

Before closing, the abdomen is filled with salt solution; the wound is sutured as in adults, using two deep stay sutures, for the rectus muscle is small and any postoperative vomiting is a severe strain upon it.

The baby usually vomits once during the afternoon following, but probably never again. Convalescence is rapid. Through the entire care of these cases the fullest coöperation is required between pediatrician and surgeon.

Nothing in the surgery of children is more satisfying than to have a mother bring a sturdy four or five-year-old boy into the office to proudly show off what was once her pyloric stenosis baby.

United States Division of Mental Hygiene, Formerly Called Narcotics Division.—In a recent report Surgeon-General H. S. Cumming of the Public Health Service indicates that the year ended June 30, 1930, has been characterized by additional legislation seeking to coördinate and crystallize the functions of the Narcotics Division, now designated by law as Division of Mental Hygiene.

At the close of the year, the functions of the Division of Mental Hygiene, in the office of the Surgeon-General, included the administration of the two recently authorized United States narcotic farms; studies and investigations of the nature of drug addiction and the best method of treatment and rehabilitation of persons addicted to the use of habit-forming drugs; the dissemination of information on methods of treatment and research in this particular field; coöperation with state and local jurisdictions with a view to their providing facilities for the care and treatment of narcotic addicts; the supervising and furnishing of medical and psychiatric service in federal penal and correctional institutions; studies and investigations of the abusive use of narcotic drugs and the quantities of such drugs necessary to supply the normal and emergency medicinal and scientific requirements of the United States; and, lastly, studies and investigations of the causes, prevalence, and means for the prevention and treatment of mental and nervous diseases.

The site for the first United States Narcotic Farm has been selected at Lexington, Kentucky, and plans are under way for the development of the necessary buildings thereon. Medical officers have been assigned to the medical and psychiatric clinics established at the several penal and correctional institutions.—*United States Public Health Service.*

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Leaflet Regarding Rules of Publication.—California and Western Medicine has prepared a leaflet explaining its rules regarding publication. This leaflet gives suggestions on the preparation of manuscripts and of illustrations. It is suggested that contributors to this journal write to its office requesting a copy of this leaflet.

EDITORIALS*

THE SAN FRANCISCO ANNUAL SESSIONS OF 1931 AND 1906—TWENTY-FIVE YEARS

May California and Western Medicine in Press Before Sixtieth Annual Session Convenes.—This, the May number of CALIFORNIA AND WESTERN MEDICINE, goes to press before the opening meeting of this year's annual session of the California Medical Association. It is not possible, therefore, to discuss at the time this is written the happenings at the 1931 annual session. If the program as printed in the April CALIFORNIA AND WESTERN MEDICINE can be taken as a criterion, it may be assumed that the meeting will be highly successful in every way.

* * *

Greetings: To Retiring President Kinney, to President Harris, and to the New President-Elect.—The presidential address by Dr. Lyell C. Kinney on "The Cancer Program" is printed in this issue, page 321, and is commended to the thoughtful consideration of all readers. Particularly our Retiring President's suggestions that the profession accept its responsibilities in this major public health problem by doing something tangible and constructive in California, as by him indicated.

In this connection it is fitting to express the appreciation of the medical profession to Doctor Kinney for his willingness during the last year to meet his presidential responsibilities in fullest measure. His visitation work was especially commendable and sets a worthy standard for his successors, and shows how valuable could be such field visitation, a something which Dr. Percy T. Phillips of Santa Cruz strongly advocated when he was president of the California Medical Association.

To this year's president, Dr. Junius B. Harris of Sacramento, also are extended the good wishes of the members of the California Medical Association. Dr. Harris assumes office as president at a time when the legislature is in session at Sacramento, the tentative date for adjournment having been set for May 8. We wish that all members of the California Medical Association could only know how much time, effort and efficient service Dr. Harris has rendered organized medicine in his other official position as chairman of the California Medical Association Committee on Public Policy and Legislation. Doctor Harris, himself a very busy physician and surgeon, has at all times been willing to serve the profession in legislative matters, and his excellent work in that field is the best indication of how he will strive to meet his new responsibilities, as he steps from the domain of president-elect into that of the active presidency. We feel certain that he will follow up President Kinney's visitations, by himself contacting during the coming year with as many of the county societies as possible.

To the new President-elect of the California Medical Association, whosoever is to receive that great honor, CALIFORNIA AND WESTERN MEDICINE, on behalf of the members of the California Medical Association, also extends greetings.

* * *

The Memorable San Francisco Annual Session of Twenty-five Years Ago.—To the minds of older members of the California Medical Association who were in attendance at the San Francisco annual session of twenty-five years ago, and among whom the editor was one, must come back on such an occasion as this year's session at San Francisco a somewhat vivid recollection of the rapidly moving events following the great earthquake and fire catastrophe of 1906. In the Twenty-five Years Ago column of this number of CALIFORNIA AND WESTERN MEDICINE are printed a number of excerpts from the brief four-page May 1906 number of our official journal. All readers of CALIFORNIA AND WESTERN MEDICINE may well take the time to read what the founder of this journal, the late Philip Mills Jones had to say in his extemporized four-page May number of that year. Particularly should members of the California Medical Association who have come into California later than twenty-five years ago scan what was then said, to be able thus to better appreciate how the predictions of the then editor have come true in the wonderful new San Francisco which today exists. For such new members

* Editorials on subjects of scientific and clinical interest, contributed by members of the California Medical Association, are printed in the Medicine Today column which follows.

are here printed also a few lines from the Los Angeles *Herald*, in a Pacific Coast News Service dispatch of April 18, 1931, which was the date of the twenty-fifth anniversary of the San Francisco earthquake and fire.

The dispatch is as follows:

"San Francisco, April 18.—San Francisco today celebrated the twenty-fifth anniversary of its great fire.

"On a morning just twenty-five years ago an earthquake shook the city, fires followed in quick succession and much of the city was destroyed.

"Out of the ashes of 2500 acres of burned homes, factories, stores and office buildings; out of the chaos of broken water mains, twisted pavements and cracked earth has risen the city which the world knows today.

"The refugees who fled from the fire soon returned. Others followed them, with the result that the city which in 1906 had a population of 387,260 has grown to 634,394.

"From that ashy 2500 acres, whose assessed valuation was approximately $300,000,000, the city has expanded to 42 square miles, with a total assessed valuation of $1,303,025,065.

"Not content to rest on its laurels, the city has other huge tasks planned, some of which are already under way. Others are assured." . . .

NARCOTIC PRESCRIPTIONS—CALIFORNIA NARCOTIC LAWS

The California Medical Association Council's Letter of Caution of March, 1930.—Under the above caption, in this column of the March 1930 issue, page 192, attention was called to a letter on the California narcotic laws, which letter was gotten out by the Council and mailed to every member of the California Medical Association.

Only recently a communication was received by the Council from a member of one of the component county societies, in which the Council was somewhat taken to task for presumably having been frightened, when it gave expression in its letter on the desirability of all members of the California Medical Association protecting themselves from arrest by narcotic inspectors through carefully observing the technical provisions of the California statutes concerning narcotic prescriptions.

* * *

A Recent Opinion on the Narcotic Law by Attorney General Webb of California.—That the action last year taken by the Council in sending out the letter about narcotics was warranted may be gathered from the item quoted below, which has just been received by the editor from Dr. C. B. Pinkham, secretary of the Board of Medical Examiners of the State of California. The item is printed at this time because it will serve as an additional reminder and caution for members of the California Medical Association to be punctilious when they write prescriptions for narcotics.

The item follows:

"It is reported that on March 3, 1931, Attorney General Webb rendered Opinion No. 7425 in interpretation of Section 1 of 'An Act to regulate the sale, possession, distribution and use of habit forming, narcotic and other dangerous drugs and substances and providing penalties for the violation thereof,' that

" 'The Act in question requires that the prescribing physician in his own handwriting affix the date of the prescription, designate the drug and the manner of its use, the name of the person for whom the same is prescribed and his address . . . and that the prescription shall be signed and dated as of the date on which said prescription is written by the physician.'

"This opinion is of sufficient importance to be presented to the medical profession for their guidance."

LOS ANGELES COUNTY HOSPITAL—CHARGES AGAINST ITS SUPERINTENDENT

California County Hospital Problems.—As the years come and go, the county hospital situations in California take on increasing complexities.

In the February 1931 CALIFORNIA AND WESTERN MEDICINE, page 120, the attempt of the chairman of the Board of Supervisors of Santa Barbara County to inaugurate what might be considered a form of state medicine at the Santa Maria branch of the Santa Barbara Hospital was discussed.

Again in the March 1931 number of CALIFORNIA AND WESTERN MEDICINE, page 219, was given a considerable review of some opinions of the basic California laws having to do with the organization and maintenance of county hospitals, and the economic status of citizens who were eligible to admittance in such institutions. These excerpts were taken by the editor from a file which was loaned to him by Dr. Neal N. Wood, superintendent of the Los Angeles County General Hospital.

* * *

Supervisor Shaw Files Charges Against Superintendent Wood.—Comes now a new sensation in California county hospital affairs, the same being an effort to bring about the dismissal of Dr. Neal N. Wood of the Los Angeles County General Hospital. At the time this is written charges have been filed, but the hearing of Doctor Wood has not yet taken place. The result of that hearing will probably be known to members of the California Medical Association before this May issue of CALIFORNIA AND WESTERN MEDICINE is placed in the mails.

Pending such a hearing, it is better that the subject of the charges and the possible reasons therefore, as filed by Supervisor Frank Shaw, be not discussed in detail in this column. Nevertheless, inasmuch as the Los Angeles County Medical Association has been drawn into the controversy, and through its trustees and councilors has gone on record on certain phases of the matters in dispute, it is very proper to call attention thereto in this official journal of the California Medical Association. It must be agreed that to have summarily dismissed a hospital executive, after years of service, on charges from two lay

investigators, without proper opportunity for defense, and with little or no recognition of the one group of citizens, namely, the medical profession—some of whose members give gratuitous services to the county hospital, that represent a money value of several hundred thousand dollars yearly—would not have been an action fair either to such an hospital executive or courteous to the medical profession.

While charges have been filed against Superintendent Wood by Supervisor Shaw, there is pending a report on the county hospital still to be made by the Los Angeles County Efficiency Bureau. In addition, a new grand jury has been impaneled to presumably make an independent investigation of the entire county hospital, both of the old present unit, and the twelve-million-dollar unit for acute diseases which is now in course of erection. Because of the importance and for the convenience of the readers of CALIFORNIA AND WESTERN MEDICINE who should be interested in the issues at stake, several newspaper quotations are here given so that members of the California Medical Association may better understand what has taken place to date and what actions are pending in the near future. In a subsequent number of CALIFORNIA AND WESTERN MEDICINE it may be possible to make further comment on these public health matters.

* * *

The Versions of the Newspapers.—From the Los Angeles *Times* of April 14 the following is excerpted:

"Dr. Neal N. Wood will be given an opportunity to answer charges that he is incompetent as superintendent of the General Hospital at a public hearing to be held before the Board of Supervisors, beginning at 10 a. m. Thursday, the 23rd inst., and lasting two days. Formal charges against the doctor must be on file by next Friday.

"The hearing for Dr. Wood, who has been a storm center ever since an attempt was made to discharge him one week ago, will assume the form of a court with the Supervisors in rôles of both judge and jury. At the end of the trial the board can vote to dismiss the superintendent or retain him. A week ago the body voted 3 to 2 to retain him. . . . .

"One week ago Supervisor Shaw, following a report from investigators that wholesale stealing had been going on at the hospital for years, demanded the resignation of Dr. Wood on grounds of inefficient management. The board, after heated discussion, voted to retain the doctor. Supervisors Quinn and Shaw voted to oust him and Supervisors Wright, Thatcher and Mahaffey voted to retain him.

"As a result of this vote it will be necessary for Supervisor Shaw and others seeking the discharge of Dr. Wood again to file formal charges before the board. This will be done before Friday, Supervisor Shaw said yesterday.

"All members of the board have repeatedly expressed their confidence in the honesty of Dr. Wood. Also none up to the present has cast any aspersions on Dr. Wood's professional ability or his conduct relative to the medical end of the hospital. Shaw and those opposing Dr. Wood, however, believe that he not only should be a capable medical head of the institution, but also sufficiently efficient in the business management to prevent stealing and waste of supplies. They contend that he is not merely a medical superintendent, but a general superintendent. Further, that he is entirely responsible in picking an efficient business manager."

From the Los Angeles *Examiner* of April 18 the following quotations are made:

"Formal charges to be faced by Dr. Neal N. Wood, superintendent of the General Hospital, at a public hearing next Thursday were filed yesterday with the Board of Supervisors by Supervisor Frank L. Shaw in affidavit form.

"The document, bristling with serious accusations, reached the Supervisors a short time after they had received a communication from the Los Angeles County Medical Association in which the retention of Doctor Wood was urged.

"Among the chief charges hurled at Doctor Wood by Shaw were:

"That he lacks the necessary business and executive ability necessary for the position of superintendent and that this lack has resulted in the loss 'of thousands upon thousands of dollars.'

"That for many years food supplies have been stolen from the hospital almost openly by employees and that a number of these employees actually were engaged in catering to lodges and societies and 'using therefor food supplies almost openly taken from the institution.' Similarly, he added, surgical supplies, hospital equipment, linen and tableware have likewise been stolen.

"That various employees of the hospital, because of a lack of system, absented themselves and actually engaged in work for other firms and individuals while drawing pay from the county.

"That insanitary conditions have been permitted to prevail throughout the institution, that personal effects of deceased and discharged patients have been appropriated by the hospital staff, and finally that 'the incompetence of Doctor Wood is such that the cost per patient per day is nearly double the cost in similar institutions throughout the country.'

"In defense of Doctor Wood the Los Angeles County Medical Association declared that:

"'Issues of considerable more importance than the matter of petty pilfering by minor employees of the Los Angeles County General Hospital are at stake in the proposed dismissal of Doctor Wood,' adding that 'there is urgent need for clear thinking and unbiased judgment concerning the course of action to be taken.'

"The communication declared a survey by members of the staff at the hospital has placed the loss by loot at $10,000, instead of $500,000, as estimated by Deputy Sheriff Arthur L. Fitzgerald, and Jim Bolger, field secretary to Shaw, who conducted Shaw's investigation."

* * *

The Action of the Los Angeles County Medical Association.—The hearing referred to in the above excerpts, if it continues for any length of time, may see a considerable number of medical men called to the stand. The medical profession, whose members are the one group of citizens who give gratuitous service of very considerable money value to the county of Los Angeles, has very special reasons to be actively interested in these proceedings and to insist on fair play and proper courtesy. To be content with less would be an indication of lack of self-respect. When self-respect does not exist, it is hardly possible to expect others to give it.

The members of the medical profession have no desire to become involved in political controver-

sies of a civil nature, but because of their generous services they do have rights in county hospital affairs and do expect to be heard and recognized when the standards of their profession and the public hospitals in which they give massive gratuitous aid come up for discussion. In this instance it has been gratifying to note that the Los Angeles County Medical Association took a firm stand on the basic principles and facts which seem to be involved in the county hospital situation of Los Angeles County.

PUBLIC TELEPHONE DIRECTORIES—LISTINGS TO AID THE PUBLIC IN KNOWING WHO ARE WELL-TRAINED PHYSICIANS

San Francisco County Society Inaugurates a Telephone Listing.—The San Francisco County Medical Association in its *Bulletin* of April 1931 outlines a plan for a separate listing in the public telephone directory, by means of which it would be possible for a citizen who was seeking the services of a well-trained physician or surgeon to be able to find one such by consulting such a listing. The plan recommended by the committee, consisting of Drs. R. Knight Smith, Harold Brunn and Alfred C. Reed, commends itself to us as having some very favorable and practical features. It would be of greatest value, however, if practically all members of the county society coöperated in trying out the plan.

* * *

Such a Listing Plan Is a Beginning.—The plan may not be ideal in some respects, but it is at least a beginning in actual doing, and that is worth more than no end of theorizing and abstract discussion.

Years ago the editor was responsible for bringing the telephone exchange of the Los Angeles County Medical Association into existence in the belief that such a telephone exchange could be of real service to the community and to the profession. Whether or not the end results of such a telephone exchange would be greater, through the supplementary inauguration of such a special listing in the classified telephone directory—which listing or roster would gradually become known to the public as a list containing the names of only well-trained non-cultist physicians and surgeons—may be a somewhat difficult question to answer until the plan has been tried out. But on the point that there is great need of a listing of well-trained, non-sectarian physicians and surgeons to which the public could have easy and convenient access, there can be no doubt.

The plan proposed by the San Francisco County Society would seem to have possibilities for supplying a real need and would seem therefore to be worthy of consideration and discussion by other component county societies of the California Medical Association.

Details Concerning the Plan.—The following excerpt from the *Bulletin* gives further information concerning the plan:

"As classified listing stands at present, every physician listed in the main directory is listed under 'Physicians and Surgeons M. D.' in the classified section, and if he has an emergency call number, office hours or other desired information occupying another line in the list, he is charged fifty cents per month for this extra line.

"After study of the matter and conferences with the representatives of the company, the committee recommended the acceptance of the following arrangement with the Pacific Telephone and Telegraph Company. In the section 'Physicians and Surgeons M. D.' and under the heading 'Active Members of the San Francisco County Medical Society' and a small block showing the seal of the society and a few explanatory words, will appear the names, in alphabetical order, of all members, in good standing at the time of closing the press on the directory, who have agreed to pay the company fifty cents per month for the extra listing. The society will pay the monthly charge for the heading.

"No name will be placed in this listing unless it has been submitted to the company by the society, and when a name has been so submitted the company will communicate with the member, asking if he cares for this special listing.

"The board of directors approved the arrangement and an agreement has been entered into with the company. It will be furnished a list of the members in good standing and will approach them individually to find out whether they wish to sign up for this listing.

"A final word of explanation. Each member's listing in the classified section of the directory will appear in future books as it does now (unless he changes it) whether he takes the new listing or not. If he accepts the new listing, his name will also appear under the heading, 'Active Members of the San Francisco County Medical Society,' as described above, and he will arrange with the representative of the telephone company for the listing.

"This listing is not obligatory. Each member is perfectly free to make his own choice."

JAMAICA GINGER LEGISLATION—A NEW CALIFORNIA LAW

Twenty Thousand Cases of "Jake Paralysis" in the Last Year.—In the November 1930 number of CALIFORNIA AND WESTERN MEDICINE, page 823, mention was made of the announcement by the United States Public Health Service that the cause of the "Jamaica Ginger Paralysis," upon investigation has been found to be due to an adulterant not infrequently used in the manufacture of varnishes, and known as triorthocresyl phosphate. The estimated total of such "Jake Paralysis" cases which occurred in the United States during the last year was estimated to have exceeded the number of twenty thousand.

* * *

The Recent Experience in Los Angeles.—In California more recent expression of this type of poisoning took place in Los Angeles County. The Los Angeles County Health Department took steps to bring urgency legislation into operation that would deter or would put a stop on the importation from other states of such adulterated

Jamaica ginger, and on its distribution. To that end Senate Bill 930 was introduced by Senator McKinley, being

"An act to add a new section to the Penal Code to be numbered section 347b, relating to the sale and use of fluid extract of Jamaica ginger or any preparation or compound containing triorthocresyl phosphate, and declaring the urgency thereof."

This urgency measure was passed by the Legislature and was placed before Governor James J. Rolph, Jr., who signed it, so that it became a law on April 17.

* * *

Inadequacy of Federal Pure Drug Laws and of Interstate Shipment Regulations.—It is to be regretted that the federal pure food and drug laws are not sufficiently drastic to have permitted the United States Public Health Service, which made its original announcement last October, to have gone after the manufacturers of this spurious Jamaica ginger and to have penalized both the makers and the wholesale distributors thereof in different states of the Union. Had that been done the two hundred Los Angeles County cases of paralysis and the three deaths from this poison might have been avoided.

* * *

American Medical Association Council of Pharmacy Might Recommend Additional Federal Legislation.—This and similar adulterants might well receive the consideration of the American Medical Association Council on Pharmacy and the American Medical Association Bureau of Legal Medicine. Pressure on Congress, with such an example as "Jake paralysis" poisonings as a concrete talking point, would be far more apt to result in strengthening the federal pure food and drug laws than would be apt to occur when only cold-blooded and abstract pleas for such additional laws were made. In these days congressmen want an alert public to be in back of them when they sponsor such legislation. Our federal pure food and drug laws need revision. Why not whip such proposed amendments into form before the next Congress convenes?

THE CALIFORNIA LEGISLATURE—PROGRESS REPORT

California Legislature Will Adjourn May 8.—At the California Medical Association annual session in San Francisco on April 27-30 reports will be given by the Committee on Public Policy and Legislation on the status of public health and medical measures now pending before the California Legislature. The legislature is in session as this copy goes forward to the printer, but the adjournment date has been set for May 8, which is about the time this May number of CALIFORNIA AND WESTERN MEDICINE will be placed in the mails.

The delegates present at the San Francisco meeting will have heard the reports of California Medical Association officers and committees, and will carry back to their county societies a summary of what has been done in legislative matters. But what may happen at Sacramento between the close of the California Medical Association annual session and the day of adjournment of the biennial California Legislature no one is in position at this time to foretell. However, since a goodly number of members of the California Medical Association are interested in these legislative matters which are of such great importance to the further development of organized medicine in California, additional comments on some of the proposed laws in which the medical profession is directly or indirectly involved should be in order.

* * *

The Fellom Bill (S. 175) Which Would Give Corporations the Right to Practice Medicine for Profit.—In last month's issue of this journal, Senate Bill 175 was discussed. It was stated that the measure had gotten out of committee through a surprise maneuver. Fortunately there were enough senatorial friends of the medical profession to prevent immediate action, and it was sent back to committee for a further hearing. At the said hearing, a week or so later, at which medical representatives from different parts of California were present, the bill was tabled by the committee. The next day, however, through the application of the rule of senatorial courtesy, the bill was again brought out of committee to the Senate floor. At the time this account is being written it has gotten as far up as the third reading file of the Senate.

As has been previously emphasized, this bill (S. 175—Fellom) is the measure which would give corporations the right to practice medicine for profit. If it should go on to passage and signature by Governor Rolph, this measure would go far in debasing medical and public health standards. The bill is being carefully watched by the California Medical Association Committee on Public Policy and Legislation and will be fought at every turn by friends of the medical profession.

* * *

Thanks Should Be Given to Legislators Who Aid.—Those legislators, by the way, who stand firm in defense of public health standards which the medical profession holds dear should not be forgotten when they return to their home communities, but should be the recipients of proper thanks from their respective county medical societies. When administrative officers and legislators learn that physicians are intelligent observers of proceedings at Sacramento and that they have memories, both for those who support and for those who do not support public health standards, it will be found that some of our legislative problems will become much simplified. So let those Senators and Assemblymen who have stood firm for proper standards know you are and will be appreciative in word and deed.

Another Cult and Its Proposed Licensing Board.—To show what transitions can take place through parliamentary amendments in the legislature, Assembly Bill No. 1234 (Gilmore) may be here cited. That measure, as originally presented, presumably was intended to deal with certain criminal jurisdictions of Justice Courts, etc., but at the time these words are being written the measure has undergone such a transformation and metamorphosis that it now would legalize a California Board of Masseurology!

What was said on page 284 in the April CALIFORNIA AND WESTERN MEDICINE concerning a proposed Board of Naturopathic Examiners (Assembly Bill 1281) would apply also to this "Board of Masseurology" act which would permit its licentiates to do physiotherapy, physical culture, prescribe drugs and do all "except major surgery." The strange part of such cultist bills is that such measures often receive staunch support from their legislator sponsors so that much time and effort must be used to kill the measures.

* * *

How a "Qualifying Certificate" (Basic Science) Law Might Help.—Such attempts to create new cultist boards emphasize the value of a "Qualifying Certificate" (so-called Basic Science) Board, whose fundamental educational qualifications would be made applicable to all schools of the healing art. With such a "Qualifying Certificate" law, passed by initiative act, such attempts by new cultist groups as those just mentioned would probably die "a-borning." It is the only effective plan which occurs to the editor by means of which these biennial struggles with proposed laws which would create new cultist boards may be kept down to a minimum.

* * *

The M. D. Director of Institutions Bill.—Let us take another measure (Assembly Bill 1110—Sewell), sponsored originally in part by the representatives of the California Medical Association because it provided that the Director of the California Department of Institutions (see article by Doctor Hunter in March CALIFORNIA AND WESTERN MEDICINE, page 164) should be a physician. This unfortunate bill in the last several weeks has had so many amendments tacked on by legislators that it no longer has anything to do with the primary purpose of a director physician, but deals now largely with repairs in the State Capitol Building at Sacramento!

* * *

Another Fellom Bill.—Another new measure that has come to the front during the last several days (as these lines are written) is one of Senator Fellom's skeleton bills, whereby all investigators and enforcement officers of all examining boards (of which the Board of Medical Examiners of the State of California is one) would be removed from the immediate jurisdiction of the Board of Medical Examiners. And so it goes.

The State Medical Libraries Bill.—Assembly Bill 477 (Neilson) for state medical libraries was commented upon in the April CALIFORNIA AND WESTERN MEDICINE, page 284. The bill as there outlined should have an excellent chance to go on to passage. The only change made in it has been to reduce the amount of funds to be allocated from the contingent fund of the Board of Medical Examiners. Through conference and agreement with Colonel Carlos Huntington, director of the Department of Professional and Vocational Standards, it was decided to leave about one hundred and thirty thousand dollars in the contingent or reserve fund of the Board of Medical Examiners, thus reducing the sum to be allocated to the University of California for the major state medical libraries at San Francisco and Los Angeles from about seventy thousand dollars to about fifty thousand dollars. If this measure goes on to passage and signature by Governor Rolph it will be possible for every physician in California to have come to him the latest and other medical literature in which he may be interested. That is a something devoutly to be wished for.

* * *

County Societies Should Know Somewhat of Candidates.—Several other proposed bills might be discussed at this time, but space indicates that their consideration must lie over for later comment. The San Francisco annual session report of the California Medical Association Committee on Public Policy and Legislation, of which Dr. Junius B. Harris is chairman, will be printed in the June number of CALIFORNIA AND WESTERN MEDICINE and should be read by all members of the California Medical Association.

The experience of the California Medical Association officers and the Committee on Public Policy and Legislation this year has not been radically different from that which has been had in previous legislative sessions. And there is nothing to indicate that the profession can be less alert with future legislatures.

It would aid greatly, however, if physicians in the future would take a more or less active interest in legitimate political matters of a civic nature. The Public Policy and Legislation Committees of county societies should investigate and then inform their fellow members concerning the backgrounds and character of candidates for city councils, county boards of supervisors and the state legislature. It is such public officials who make our city, county and state laws. With such knowledge, support could be given to candidates who have sane and broad outlooks on public health and medical measures. Through such officials, the best interests of the State would be best conserved. But if we want to do these things, it is necessary for physicians to show proper individual and collective interest in these matters. Then almost any legitimate aspiration will be within the realm of possible achievement.

MEDICINE TODAY

This department of California and Western Medicine presents editorial comment by contributing members on items of medical progress, science and practice, and on topics from recent medical books or journals. An invitation is extended to every member of the California, Nevada and Utah Medical Associations to submit brief editorial discussions suitable for publication in this department. No presentation should be over five hundred words in length.

"Atopy," "Allergy" and "Anaphylaxis."—To explain different symptomatologies and laboratory findings, various classifications of human hypersusceptibility have been suggested, implying different etiologies and different logical therapies. One classification, for example, assumes that "true anaphylaxis" differs from certain "hereditary allergies" in that "true anaphylaxis" is always serologically transferable.[1] That this is a purely arbitrary criterion having no relationship to specific etiology or logical therapy is implied in Julianelle's [2] currently reported reproduction at will of either the transferable or non-transferable type of local anaphylaxis by varying the site of injection of the same sensitizin. In his hands intravenous injection of heat-killed pneumococci into normal rabbits, for example, leads to the development of a specific cutaneous hypersusceptibility which is serologically transferable. But the same vaccine injected intracutaneously gives in addition to this generalized allergy a specific ocular hypersensitiveness not transferable. This ocular hypersensitiveness might be classed by certain clinicians as an "hereditary allergy."

W. H. MANWARING, Stanford University.

Public Health Aspects—Epidemic Influenza. Influenza represents to the health official just an ordinary loose medical term. In other words, the clinical diagnosis and the subsequent reports when reported may be summed up usually as a senseless definition of a pathologic X. In unusual times, however, or in times of increased mortality from respiratory infections beyond seasonal expectancies or at the time of the prevalence of great pandemics, influenza as a term becomes cloaked with immense importance from a clinical, pathologic and bacteriologic standpoint, and infinitely significant from a public health standpoint. The disease occurs in serious and furious epidemics and in great pandemics as an acute, highly communicable, febrile disease. As such it represents a high mortality rate on the whole. One should be very familiar with the 1918 outbreak in which it is estimated that over 200,000,000 cases and 10,000,000 deaths occurred in a period of twelve months, throughout the world. In the United States alone, there occurred 20,000,000 cases and 450,000 deaths. Influenza pandemics were not unknown in ancient medical history, for Willis and Sydenham described the first outbreak in 1510. In fact, eighty outbreaks have been recorded since 1173. Such pandemics create public health situations that even today rapidly become chaotic as to acceptable control measures or investigative procedures. Furthermore, the rapidity of spread and the rapidity of subsidence and the undoubted occurrence of interepidemic types makes the investigative problem a complicated, necessarily hurried and expensive one. Moreover, what relationship exists between pandemic and interepidemic influenza is most obscure. This obscurity extends likewise to the relationship of type causative strains of bacteria or viruses at both periods. Suffice to say that there is no unanimity of opinion and no light sufficiently clear, no matter how extensive or timely the investigation, or careful the investigator, has been thrown upon the origin of the virus or the possible modification or attenuation. It is an attractive hypothesis to assume, in order of importance, that the virus is widely distributed; that individual, and even racial susceptibility, plays an important rôle; and that the virulence of pandemic strains subside for years or become innocuous. Microbic or viric dissociation from a virulent to a nonvirulent status has been suggested as a possible explanation to certain vagaries in the epidemiology of communicable diseases, particularly that of epidemic cerebrospinal fever, but at present this is not quite susceptible of proof. The facility and frequence of the occurrence of influenza is, however, very manifest, as is its dual epidemiologic rôle of pandemic and interepidemics.

Since 1918 the public health official has only been concerned with interepidemic influenza. Apparently, this type of the disease may be considered a respiratory infection rapidly diffusing through and involving whole communities or occurring in sharply defined outbreaks in schools, colleges, institutions, etc.

Clinical identification of influenza is obviously difficult but not unattainable. Conversely, microbic or viric identification is at present impossible. It is, therefore, on certain epidemiologic characteristics that identification can be based with any degree of certainty. The epidemiologic features en masse may be briefly stated to be its close relation of the curve of influenza to that of pneumonia; its high morbidity; its rapid dissemination over wide areas; its generally characteristic racial and age incidence and its dislocation of ordinary age distribution mortality of respiratory diseases with increase in young adults; its great explosiveness (the peak of the curve being reached in two

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1 Karsner, H. T. Anaphylaxis and Anaphylactoid Reactions. The Newer Knowledge of Bacteriology and Immunology, Chap. 83, p. 967, 1928. University of Chicago Press.

2 Julianelle, L. A. Reaction of Rabbits to Intracutaneous Injections of Pneumococci and Their Products, J. Exper. Med., 51, 643, April 1930.

or three weeks or an incidence curve of not more than four to eight weeks); its high dispersiveness (many widely scattered cities reaching the peak of the curve about the same time, for no disease spreads so rapidly in so short a time) and its recurrences.

The lack of progress in control measures, the lack of knowledge as to methods of spread and the lack of information as to a microbic or viric factor, need not serve as a deterrent of discussion. In 1918, when influenza swept the world in a vast pandemic, 230,845 cases were reported in California. The years 1920, 1922, and 1928, could be considered interepidemic, for in California there was reported, approximately, an average number for each year and over 160,000 cases for these periods. Compare this with such nonepidemic years as 1921, 1924 and 1930, when approximately 1800 cases were reported on an average and over 5443 cases for these periods. Naturally predictions for the future trend of influenza for California or the world is fraught with statistical difficulties, but the health official may well approach the problem and carefully watch the statistical records in order to give warning of any trend to epidemic proportions. Definite conclusions, however, appear to be unwarranted. There seems to be no doubt that a wave of respiratory diseases, many cases of which have been rightfully or wrongfully diagnosed as influenza, has recently swept over parts of the eastern section of the United States. New York City reported sixty-eight cases for the week ending January 3, 1931, and 1140 for the week ending January 24. New Jersey, Maryland, North Carolina, and South Carolina reported similar increases. California only reported 159 cases for the first two weeks in January. During the week ending January 31, 1931, approximately 13,000 cases of influenza were reported in the United States, two-thirds of which were in the South Atlantic States, and 60 per cent in Maryland, North Carolina, and South Carolina. In Europe, Poland reported increased prevalence in November 1930, and Germany and France in December 1930. Likewise, did Jugo-Slavia, Denmark, Switzerland, and Spain. The disease was evidently mild, and clinical benignity the rule. England and Wales reported that from 107 towns in December the general mortality was 12.8 per 1000, which increased to 17.2 per 1000 in the week ending January 17, 1931.

Having so lightly disposed of 1930 and 1931, let us consider 1928 and 1929. Any doubt as to the reality of an epidemic of influenza can be dispelled by a survey of the mortality statistics. Up to January 5, 1929, 26,000 deaths occurred in the United States which were attributed to this epidemic, and this is a conservative estimate. This increased mortality was definitely on the decline in January 1929, especially in the Pacific and Mountain States. This epidemic, as well as that of 1926, apparently started on the Pacific Coast.

The origin of epidemics of influenza is particularly shrouded in obscurity—indeed, if a single starting point does exist. One need only recall the history of the 1918 outbreak to bring to mind that there was reported present in the army camps of Great Britain and Continental Europe in 1916-1917, a purulent type of bronchitis with the so-called heliotrophic hue or cyanosis. The disease was then not regarded as contagious, but was, perhaps, the precursor of the great pandemic of our time. In fact, in the spring and summer of 1918 western Europe presented the occurrence of a disease which was probably the immediate forerunner of the pandemic and now called the first epidemic wave. Moreover, the observations, at autopsy, of LeCount, in Chicago in April 1918, and the explosive type of outbreaks at Camp Funston and Camp Oglethorpe in March, and particularly the reports of Kerr and his associates at Camp Lewis in April, indicated the probable presence of epidemic influenza in both the United States and Europe in early spring, at least in April. It appears, therefore, plain that in wide areas of the world, in 1918, outbreaks were occurring and original foci or transference from one country to another or one continent to another cannot be traced with any degree of plausibility. Two epidemiologic facts stand out prominently. That the first wave was relatively trivial and that the second wave was more explosive, more dangerous, more dispersive, more incapacitative, more depressive of mind, and reaching the crest of the wave in October and November. The epidemics which show all such features, especially the world-wide prevalence, are somewhat rare. Minor epidemics or recurrences at frequent intervals are of practically the same epidemiologic characteristics, but presenting less severe clinical types and, therefore, less effect on the general mortality. It would appear that since 1918 distinct outbreaks have occurred, particularly in 1920, 1923, 1926, and 1929, with certain other minor affairs, that are true epidemic influenza of modified virulence and intensity. The assurance of increased mortality from respiratory disease over the expectancy for these periods which, incidentally or otherwise, have occurred in triplet waves with the decided statistical mortality superiority for 1920 and 1929 may be sufficient ground for further assuming that a maximum respiratory death rate may appear in 1932. The tendency of epidemic diseases, however, is to fluctuate unseemingly, but usually maintaining a fixed seasonal basis. Epidemic influenza, however, stands alone, as it has spread at irregular intervals over wide areas, affecting large proportions of the population and presumably disregarding climatic and seasonal conditions. The accumulation of population susceptibles is a doubtful factor since, ordinarily, individual immunity is considerably transient.

It is not wise to assume the mantle of pessimism about any epidemic disease, but of all such diseases influenza has its unique universality; its rapidity of incidence; its extraordinary extent over land and sea; its occurrence in opposite seasons no matter the weather; its effect on all

classes of people; its varying clinical intensity; its apparent extension to animals, as for instance swine, and its recurrences at more or less stated intervals. Notwithstanding all of these, there should be continued, unremittingly, the collection and collation of data, especially clinical, of any visitation of the disease in order to deduce certain principles respecting the mode of propagation and the exciting factor and the measures to be adopted for control. To scientific medicine and public health this disease offers a most intriguing mystery to be solved.

J. C. GEIGER, San Francisco.

Allergic Manifestations in Superficial Fungus Infections.—The rapid spread of epidermophytosis during the past few years makes this disease a problem of primary importance not only to dermatologists, but to the medical profession as a whole, as well as to public health officers, school nurses, and directors of physical education.

We have become fairly familiar with the clinical picture of what the advertising artists are pleased to call "athlete's foot": the white, sodden macerated condition between the toes and in more active cases, areas of scaling and vesiculation on the soles and about the toes. Material removed from these lesions, either scales or the excised tops of vesicles, when examined microscopically after preparing with 40 per cent potassium hydroxid, usually shows large numbers of fungus mycelia, most commonly the *Epidermophyton Kaufman-Wolf*, although other organisms have been reported. The fungi can also be easily cultivated on Sabouraud's medium.

Frequently similar lesions occur on the hands either in the form of areas of scaling or of large, grouped vesicles. The lesions on the hands usually appear later than those of the feet and are practically always sterile on culture and negative for fungi on microscopic examination. A number of investigators have verified this observation, and Peck [1] has recently summarized and amplified this work in a very admirable contribution in which he shows conclusively that such lesions on the hands represent an allergic reaction to the infection on the feet, as verified by the presence of a positive intracutaneous reaction to trichophytin, an extract made from a culture of the fungus. He adds twenty-three new cases to a previous series of twenty-four reported by Jadassohn and himself, making a total of forty-seven patients presenting epidermophytosis of the feet, all with positive microscopic and cultural findings and positive trichophytin intracutaneous tests, who at the same time had lesions on the hands of an eczematoid or dyshidrotic nature which, with one exception, were negative microscopically and culturally. The lesions are designated as epidermophytids. It is thought that they are due to the hematogenous transportation of fungi or their toxins from the original focus on the feet, and are due to the development of an allergic state.

Peck reproduced the disease experimentally in a volunteer by inoculating a culture of *Epidermophyton Kaufman-Wolf* between the toes. Preceding the inoculation the trichophytin reaction was negative. Three days after inoculation without trauma, infection had taken place, as revealed by the clinical appearance and by a positive microscopic examination. The trichophytin reaction became positive thirteen days after inoculation, and epidermophytids began to develop on the hands about a week later. The lesions on the hands were sterile.

One very practical point is brought out by these observations, namely, that patients presenting eczematoid eruptions of the hands should be examined for fungus infections of the feet. Many of Peck's patients were unaware of foot infections, yet treatment directed solely toward eradicating the infection of the feet caused the lesions of the hands to disappear. Since it is also known, however, that primary fungus infections do occasionally occur on the hands, it is obviously desirable that suspected lesions should be examined microscopically before strong antiparasitic remedies are applied.

It should be an occasion for rejoicing that at least one group of stubborn and recurrent eczemas of the hands has been transferred from the incurable to the curable column.

SAMUEL AYRES, JR., Los Angeles.
NELSON P. ANDERSON, Los Angeles.

[1] Samuel M. Peck, Epidermophytosis of the Feet and Epidermophytids of the Hands—Clinical, Histologic, Cultural, and Experimental Studies. Arch. Derm. and Syphil., 22:40, July 1930.

Deaths From Acute Poisoning.—An analysis of 440 deaths from acute poisoning among Metropolitan Industrial policyholders discloses that more than one-quarter (115) resulted either from the mistaking of poisonous drugs for medicines or from overdoses of medicines containing poisons. Among the actual poisons which caused these 115 deaths, bichlorid of mercury leads the list with 22; overdoses of either allonal, luminal, or veronal proved fatal in 18 instances; arsenic caused twelve deaths; lysol, 11; and carbolic acid, 6. In twenty-eight cases, various other poisons were named and in six the name of the poisonous substance was not specified.

Ingestion of wood or denatured alcohol, taken either as a substitute for alcoholic beverages or mistaken for alcoholic beverages, caused 118 deaths, or more than one-quarter of the cases studied.

Young children are more frequent victims of accidental poisoning than are persons at any other age. There were, for example, 104 deaths of young children in this group of cases, in most of which the death resulted from the carelessness of parents in leaving pills or other poisonous agents within reach. Strychnin takes a heavier toll of child life than does any other poison, with kerosene, lye, oil of wintergreen, arsenic, and phosphorous figuring more or less prominently. Based on the results of this study, we would stress the dangers which arise from leaving poisons within the reach of young children. While most of these deaths were probably due to sheer carelessness on the part of parents, it is possible that, in many cases, the parents did not know that they were actually leaving deadly poisons where children would have access to them. More conspicuous labels on containers would thus have averted some of these deaths.—*Statistical Bulletin, Metropolitan Life Insurance Company*, February 1931.

STATE MEDICAL ASSOCIATIONS

CALIFORNIA MEDICAL ASSOCIATION*

JUNIUS B. HARRIS.....President
JOSEPH M. KING.....President-Elect
EMMA W. POPE.....Secretary

OFFICIAL NOTICE

San Francisco Annual Session of the California Medical Association.—Newly Elected Officers.—As this number of CALIFORNIA AND WESTERN MEDICINE is going to press, the concluding meetings of the sixtieth annual session of the California Medical Association are being held. This year's San Francisco annual session of the California Medical Association will go down into the history of the organization as one of its most successful yearly reunions. The committees in charge performed their duties in admirable and successful manner.

The officers who were elected by the House of Delegates to fill the different vacancies are as follows:
President-elect, Joseph M. King, Los Angeles (1932).
Speaker of the House, Edward M. Pallette, Los Angeles (1932).
Councilors:
Third District—H. J. Ullmann, Santa Barbara (1934).
Sixth District—Karl Schaupp, San Francisco (1934).
Ninth District—Henry S. Rogers, Petaluma (1934).
Councilor-at-Large:
George G. Reinle, Oakland (1934).

Delegates to the American Medical Association for the sessions of 1932 and 1933:

Delegates	Alternates
Dudley Smith, Oakland.	LeRoy Brooks, San Francisco.
F. C. E. Mattison, Pasadena.	Fred B. Clarke, Long Beach.
Albert Solland, Los Angeles.	William H. Gilbert, Los Angeles.

Alternate to Doctor Irving Ingber for the sessions of 1931 and 1932, Doctor Charles A. Dukes.
Member of the Program Committee—Lemuel P. Adams, Oakland (1934).

COMPONENT COUNTY SOCIETIES

NAPA COUNTY

The regular monthly meeting of the Napa County Medical Society was held Wednesday, April 1, at the St. Helena Sanitarium. The society and auxiliary were welcomed by Doctor Vollmer, superintendent of the sanitarium, and a delightful dinner was enjoyed. This was followed by a short recess to permit the ladies of the auxiliary to hold their meeting.

The meeting was called to order by Doctor Northrop, president, and routine business transacted.

The speaker of the evening, L. L. Stanley, M. D., resident physician of San Quentin, was then introduced. His subject was divided into three phases: A study of twenty-five convicts, illustrated with lantern slides; effect of feeding testicular extract on goldfish; and effect of coffee on sleep.

Members present were: E. F. Anderson, W. L. Blodgett, A. E. Chappell, C. A. Gregory, C. E. Nelson, R. S. Northrop, J. Robertson, H. W. Vollmer, L. Welti, D. B. Williams, and George J. Wood.

Members of the Woman's Auxiliary present were: Mrs. C. H. Bulson and Mrs. R. S. Northrop.

Drs. Ruth Miller and Ida Nelson of Napa Sanitarium and J. M. Scanland and T. H. Stice of Imola were present as guests.

C. A. JOHNSON, *Secretary.*

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ORANGE COUNTY

The regular monthly meeting of the Orange County Medical Association was held on Tuesday, April 7, at 8 p. m. in the staff room of the County Hospital. President E. J. Steen called the meeting to order for the transaction of business and the minutes of the last meeting approved.

Resolutions were presented and ordered sent to Dr. E. D. Kilbourne, who leaves to take up the practice of medicine in his former home at Honolulu, expressing the good wishes of his colleagues with whom he has been associated in Orange County during recent years.

The question as to a patron membership to be taken out in the Barlow Medical Library for another year was discussed. It was found that many of the members have made use of this library during the past year and all expressed their approval. By vote the secretary was ordered to draw a check for the sum of $25 for another year's patron membership in the Barlow Medical Library.

The first reading of the application of Dr. Hiram M. Currey for membership by transfer from the Los Angeles County Medical Association was heard.

The final reading of the application of Dr. Roeds E. Yeager was then heard, and by ballot he was elected to membership in this association.

Dr. J. M. Burlew reported a very interesting case of leukemia coming under his observation quite recently. An unexpected early and fatal termination was the result.

The scientific program consisted of a discussion of tuberculosis. Dr. Waldo Wehrly gave a very complete and detailed paper on "The Early Diagnosis of Tuberculosis." This was limited to pulmonary disease. A written discussion prepared by Dr. K. H. Sutherland and read by Dr. E. L. Russell of the county health department brought forth many favorable comments.

Dr. A. E. Chase was the next speaker of the evening, his subject being "X-Ray Findings in Early Pulmonary Tuberculosis." This was a very concise and interesting paper and was illustrated by lantern slides in a very clear-cut manner. This was discussed by Dr. Willis Baker.

As an added attraction, Mr. M. J. Cloyes showed two reels of motion pictures—one on "Emergency Operations on Wounds of the Liver and Bladder," the other on "Colles' Fracture."

There being no more business to come before the society, the meeting adjourned and the members enjoyed a delicious lunch served by the nurses of the hospital through its superintendent, Doctor Zaiser.

HARRY G. HUFFMAN, *Secretary.*

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SAN JOAQUIN COUNTY

The stated meeting of the San Joaquin County Medical Society was called to order Thursday evening at 8:30 o'clock, March 5, in the Medico-Dental

* For a complete list of general officers, of standing committees, of section officers, and of executive officers of the component county societies, see index reference on the front cover, under Miscellany.

clubrooms at 242 North Sutter Street, Stockton, by Dr. George H. Rohrbacher, president.

After reading and approval of the minutes, Dr. Pieter van der Leek and Dr. Macario D. Bautista, both being favorably reported upon for membership by the Admissions Committee, were elected to membership.

The president appointed Drs. R. T. McGurk, J. F. Doughty, and J. V. Craviotto as a special History Committee to report to the California Medical Association some time this year.

The paper of the evening was read by Dr. Harold M. F. Behneman of the University of California on the subject, "The Present Status of Physiotherapy."

The discussion was opened by Dr. C. D. Holliger, followed by Doctors Smythe, Van Meter, and B. J. Powell, Sr.

There being no further business, the meeting was adjourned and refreshments served.

C. A. BROADDUS, *Secretary.*

SANTA BARBARA COUNTY

The regular meeting of the Santa Barbara County Medical Society was held at the St. Francis Hospital on Monday evening, April 13, with the president, Dr. H. J. Ullmann, in the chair.

Dr. A. E. Koehler of the Santa Barbara Cottage Hospital gave a most interesting and instructive talk on "Clinical Aspect of the Functions of the Suprarenal Gland."

This paper was discussed by Doctors Shelton, Nuzum, Moffat, Sansum, Pierce, Stevens, Thorner, Williams, Wilcox, and Ullmann.

The society then went into executive session and the secretary read a letter of thanks from Dr. Harold Sidebotham, who had recently been elected into honorary membership. Doctor Sidebotham being present was then introduced to the society.

A clipping from the San Francisco County Medical Society *Bulletin* was read regarding members of the County Medical Society having their names in the classified index of the telephone book, under the heading "Active Membership of the Santa Barbara County Medical Society." This was discussed by Doctors Means and Pierce and it was then moved, seconded and carried, that a committee be appointed to discuss with the telephone company the cost and whether such an arrangement was practical and report back at the next meeting. Doctor Koefod was appointed chairman of this committee and Doctors Ullmann and Eaton members.

It was then moved, seconded and carried, that the Santa Barbara County Medical Society take a vacation and dispense with the June, July, and August meetings.

The transfer card of Dr. Robert L. Richard from the San Francisco County Medical Society was read; also the applications of Drs. Joseph A. d'Alessio, H. I. Burtness; Lyman A. Cavanaugh, and August L. Mollath were read. Upon balloting, all these applicants were unanimously elected into membership.

Pursuant to the request of the State Society, the president appointed an historical committee, with Dr. Harold Sidebotham as chairman, the other member, Dr. P. C. Means, and these two to appoint a third.

WILLIAM H. EATON, *Secretary.*

SANTA CLARA COUNTY

The Santa Clara County Medical Society met on the evening of March 11 at the San Jose Country Club as a joint assembly of the Santa Cruz, Monterey, San Benito, and Santa Clara counties to welcome our state president, Dr. Lyell C. Kinney of San Diego. A splendid chicken dinner was served, and several musical numbers were rendered by the quartet of the Santa Clara University.

The following delegates to the annual state meeting were elected:

Delegate: Dr. George Barry, term of two years.

Alternates: Dr. Dell Lundquist, term of two years; Dr. Cletus Sullivan, term of two years.

President Kinney of the State Association presented a very sound and constructive discussion of the functions of a county medical society, particularly as it related to the responsibility of the profession to public health, public education on health matters, and the subject of medical economics.

Following his address Mr. Hartley Peart, counsel for the State Society, discussed in an informal way some of the exigencies which may confront the physician in his relation to the law.

LUCAS W. EMPEY, *Assistant Secretary.*

VENTURA COUNTY

The regular monthly meeting of the Ventura County Medical Society was held Tuesday, March 10, at the Ventura County Clinic Building. The meeting was called to order by President Wright at 8 p. m.

Members present were: Doctors Smolt, Bianchi, Hendricks, W. S. Clark, Achenbach, Mosher, Homer, Felberbaum, Wright, Welch, D. G. Clark, Patton, and Armitstead.

There was some discussion about the proposed new arrangement of the county health problem, and a committee was appointed, consisting of Doctor Coffee (chairman), D. G. Clark and H. B. Osborn, this committee to report at the next meeting.

The scientific program consisted of the presentation of a paper by Doctor Kutzmann on "Back Pain in Relation to Urology." The paper was well received, being followed by an informal discussion.

R. B. AMITSTEAD, *Secretary.*

YOLO-COLUSA-GLENN COUNTIES

The Yolo-Colusa-Glenn Counties Medical Society met at Orland on Wednesday, April 8. Twenty-four of our own members attended, two from Tehama County, and one from Butte County. Twelve members of the Woman's Auxiliary attended.

Dinner was served at the Hotel Royal at seven o'clock, after which Dr. Howard Morrow gave a lecture on diseases of the skin, which was illustrated with lantern slides.

W. E. BATES, *Secretary.*

CHANGES IN MEMBERSHIP

New Members

Los Angeles County—

Edward H. Lane
Elmer Ellsworth Langley
Barnett Lipson
Richard B. McGovney
Charles D. Miller
Robert J. Moes
John Edward Neville
Robert Pottenger
James Edwin Scobee
George Byron Setzler
Dora J. Silverman
Esther Somerfeld
A. K. Swersie
Harold L. Thompson
Ralph J. Thompson
Lawrence F. Whittaker
David N. Yaker

Riverside County—Joseph W. Cook.

Sacramento County—Beaumont Brown.

San Diego County—Harry A. Cave.

San Francisco County—Henry LeRoy Franklin.

San Joaquin County—Macario D. Bautista, Pieter van der Leek.

Santa Barbara County—August L. Mollath, Hildahl I. Burtness.

Santa Clara County—John James Bourn, Richard E. Graun.

Santa Cruz County—Samuel Powell Tipson, Joseph Carr Johannes.

Siskiyou County—Joseph Langer.

Resignations

Eugene J. Bittman, from San Diego County.

Robert M. Dodsworth, from Los Angeles County.

Thomas I. James, from San Francisco County.

Emery Singer, from Los Angeles County.

Frank M. Wood, from Los Angeles County.

Leonard Woods, from Alameda County.

Transfers

Thomas J. Crowley, from San Francisco to San Mateo County.

Hiram M. Currey, from Los Angeles to Orange County.

F. G. Dutton, from San Francisco to San Mateo County.

Aaron Friedman, from San Francisco to San Mateo County.

F. Edwyn Garfinkle, from San Francisco to Marin County.

Sophie B. Hewitt, from San Francisco to Marin County.

George C. Holleran, from Riverside to Imperial County.

Myron S. King, from San Bernardino to Los Angeles County.

David E. Matzke, from San Francisco to Monterey County.

Leon Melkonian, from San Francisco to Santa Clara County.

John L. Montgomery, from San Francisco to Los Angeles County.

Robert Louis Richards, from San Francisco to Santa Barbara County.

David C. Strong, from San Francisco to Mendocino County.

Henry J. Trachman, from Sonoma to Los Angeles County.

Marie A. Vachout, from Santa Clara to Los Angeles County.

Deaths

Fulton, Dudley. Died at Los Angeles, March 22, 1931, age 57 years. Graduate of Jefferson Medical College of Philadelphia, Pennsylvania, 1899. Licensed in California, 1901. Doctor Fulton was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

Heaney, Robert Harold. Died at Yreka, March 18, 1931, age 40 years. Graduate of University of California Medical School, San Francisco, 1917. Licensed in California, 1917. Doctor Heaney was a member of the Siskiyou County Medical Society, the California Medical Association, and the American Medical Association.

Hoover, Frank Bernard. Died at San Jose, April 12, 1931, age 48 years. Graduate of Northwestern University Medical School, Illinois, 1907. Licensed in California, 1929. Doctor Hoover was a member of the Santa Clara County Medical Society, the California Medical Association, and the American Medical Association.

Lucas, William Thomas. Died at Santa Maria, March 21, 1931, age 81 years. Graduate of Cooper Medical College, San Francisco, 1876. Licensed in California, 1876. Doctor Lucas was a member of the Santa Barbara County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Nichols, William Van Deveer. Died at Oceanside, March 16, 1931, age 70 years. Graduate of University of Pennsylvania School of Medicine, Philadelphia, 1885. Licensed in California, 1892. Doctor Nichols was a retired member of the San Diego County Medical Society, the California Medical Association, and the American Medical Association.

Packard, Charles Walter. Died at Los Angeles, March 18, 1931, age 58 years. Graduate of State University of Iowa College of Medicine, Iowa City, 1897. Licensed in California, 1927. Doctor Packard was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

Servin, Guillermo Ramon. Died at Los Angeles, April 11, 1931, age 70 years. Graduate of School of Medicine and Pharmacy of Guadalajara, Jalisco, Mexico, 1885. Licensed in California, 1914. Doctor Servin was a member of the Los Angeles County Medical Association, the California Medical Association, and the American Medical Association.

Williams, Marian Walker. Died at Hadlyme, Connecticut, August 29, 1930, age 56 years. Graduate of Johns Hopkins University School of Medicine, Baltimore, 1901. Licensed in California, 1920. Doctor Williams was a member of the Santa Barbara County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Williams, Thomas Arthur. Died at Pasadena, March 30, 1931, age 66 years. Graduate of Cooper Medical College, San Francisco, 1901. Licensed in California, 1901. Doctor Williams was a member of the Los Angeles County Medical Association, the California Medical Association, and a Fellow of the American Medical Association.

THE WOMAN'S AUXILIARY OF THE CALIFORNIA MEDICAL ASSOCIATION*

Orange County

The March meeting was held in Santa Ana at the home of Mrs. J. I. Clark, with Mrs. R. P. Yeagle assisting, and was followed by tea. A very interesting talk was given by Miss Ethel Swope, executive secretary of the Fifth District of the California Nurses' Association, outlining present nursing problems. Under the leadership of Mrs. W. P. Baker, the auxiliary voted to aid in making a health survey of the State of California, which has been initiated by President Hoover.

The April meeting was held in Capistrano at the home of Mrs. Paul Esslinger. Mrs. R. A. Cushman of Santa Ana gave an interesting review of the book "The Story of San Michele" by Dr. Axel Munthe. The ladies were then entertained by two very gifted musicians from Laguna Beach—Mrs. Dyer, who sang a series of Japanese songs, accompanied by Mrs. Hubbard. The tea hour then adjourned the meeting.

* * *

Sacramento County

A woman's auxiliary in Sacramento County was formed at the earnest solicitations of Mrs. Percy, our state president, on March 4 at the home of Mrs. A. M. Henderson. Forty-seven ladies attended and joined the organization. The auxiliary adopted the name of Woman's Auxiliary to the Sacramento Society for Medical Improvement, and elected the following officers: Mrs. A. M. Henderson, president; Mrs. W. E. Briggs, first vice-president; Mrs. William K. Lindsay, second vice-president; Mrs. Dave Dozier, recording secretary; Mrs. C. E. Von Geldern, correspond secretary; Mrs. Frederick Scatena, treasurer. Directors—Mesdames F. F. Gundrum, Edward Babcock, F. W. Lee, George Foster, W. F. Van Den Berg, and R. A. Peers.

EDNA M. BALL, *Secretary.*

* As county auxiliaries to the Woman's Auxiliary of the California Medical Association are formed, the names of officers should be forwarded to the state secretary-treasurer, Mrs. Dexter R. Ball, 2419 Bonnie Brae Street, Santa Ana, and to the California Medical Association office, Room 2004, 450 Sutter Street, San Francisco. Brief reports of county auxiliary meetings will be welcomed for publication in this column.

NEVADA STATE MEDICAL ASSOCIATION

W. A. SHAW.....President
R. P. ROANTREE, Elko.....President-Elect
H. W. SAWYER, Fallon.....First Vice-President
E. E. HAMER, Carson City.....Second Vice-President
HORACE J. BROWN.....Secretary-Treasurer
R. P. ROANTREE, D. A. TURNER, S. K. MORRISON.....Trustees

COMPONENT COUNTY SOCIETIES

WASHOE COUNTY

The regular monthly meeting of the Washoe County Medical Society took place on the night of April 12 at the State Building, Reno. After approval of the minutes, the names of Doctors Schramm and Wright were favorably voted upon for membership.

Dr. E. E. Hamer, president of the State Board of Health, read an informative paper on the proceedings of the session of the Nevada legislature which recently closed. In speaking of his efforts to bring about certain amendments to the present Medical Practice Act, he stated the difficulty of his efforts. It was with difficulty that the passage of Senate Bill No. 122 was secured. The present Medical Practice Act for Nevada is, in substance, a copy of the California Medical Practice Act, but has some improvements. To practice now in Nevada a foreigner must either be naturalized or show evidence that the naturalization will be effected. Permit for an applicant to appear for examination or reciprocity is now discretionary with the Board of Medical Examiners. Taken altogether, Doctor Hamer said Nevada now possesses one of the best medical practice acts in the United States. This certainly is a long step forward, for it places the admission of candidates upon an equality with any reciprocating state.

The clauses in the Act with reference to unprofessional conduct have been strengthened. Taken altogether, Nevada now goes before the nation with a licensing board that is as careful of requirements and as exacting in details as any state in the Union.

The bill which proposed to regulate the present scope of the osteopaths died a political death. It is entirely possible that the defeat of the regular profession in this session of the Nevada state legislature have a more salutary effect upon the profession than would have been gained by a victory. If any proposal is in order for any medical changes for the next two years, it is altogether likely that there will be a more perfected organization which will be competent to handle the situation. There was considerable discussion as to the hows and wherefores of such proceedings. As always, there were divergent opinions with reference to the best manner of procedure; some questioned whether it was even feasible to attempt any corrective legislation at all. Doctor Hamer's paper received the thanks of the society, and he was warmly complimented for his efforts in the legislature on behalf of the interests of the profession.

THOMAS W. BATH, *Secretary.*

UTAH STATE MEDICAL ASSOCIATION

WILLIAM L. RICH, Salt Lake City.....President
R. A. PEARCE, Brigham City.....President-Elect
M. M. CRITCHLOW, Salt Lake City.....Secretary
J. U. GIESY, 701 Medical Arts Building, Salt Lake City.....Associate Editor for Utah

COMPONENT COUNTY SOCIETIES

BOX ELDER COUNTY

The meeting of the Box Elder County Medical Society was held at Brigham on March 12. Those present were: Doctors Luke, Betenson, Mahannah, Pearse, Wymuller, and Cooley. Doctors Betensen and Pearse were appointed on the Committee for the Utah Whitehouse Conference on Child Health and Protection. The time of the meeting was taken up with business affairs of the society.

R. A. PEARSE, *Secretary.*

CARBON COUNTY

On the evening of March 21 at Price, the Carbon County Medical Society entertained its members and visiting members of the Utah State Medical Association at a banquet given in honor of Dr. R. L. Dresel of San Francisco.

After the banquet Doctor Dresel gave a very interesting paper on "Compression Fractures of the Spine."

SALT LAKE COUNTY

A special meeting of the Salt Lake County Medical Society was held at the Newhouse Hotel on Friday evening, March 20.

The meeting was called to order at eight o'clock by President F. M. McHugh. Thirty-five members were present.

E. R. Murphy acted as secretary. The minutes of the previous meeting were read and accepted without correction.

The applications of Drs. Lester Wight, R. A. Johnson, and S. L. Netoliskey were read and turned over to the board of censors.

The following resolution of the Necrology Committee, Dr. J. U. Giesy, chairman, was read:

IN MEMORIAM

Whereas, Our friend and respected confrère, Dr. Ira A. E. Lyons, has in a fullness of years reached the end of an admired and useful life; and

Whereas, We his fellow members of the Salt Lake County Medical Society mark his passing with a sincere regret; be it

Resolved, That we formally express our sense of loss in the form of this resolution; that a copy of the same be spread for record on the minutes of the society, and a copy sent to the daughters who survive our friend, as a mark of our collective and individual sympathy in their loss.

Dr. J. Z. Brown moved that the resolution be approved and that a copy be forwarded to CALIFORNIA AND WESTERN MEDICINE. Motion seconded and carried.

Dr. R. L. Dresel of San Francisco addressed the society on several orthopedic subjects. This paper was discussed by Drs. L. C. Snow, W. F. Beer, L. W. Paul, and S. L. Baldwin.

* * *

The regular meeting of the Salt Lake County Medical Society was held Monday evening, April 13, at the L. D. S. Hospital. Forty-one members and five visitors were present.

The meeting was called to order at eight o'clock by President F. M. McHugh.

The minutes of the previous meeting were read and accepted without correction.

Dr. A. C. Callister, chairman of the hospital, conducted the clinical meeting. The following papers were presented: "Duodenal Ulcer" by J. S. Tyree; "Gunshot Wound of Lung" by L. A. Stevenson; "Harelip and Cleft Palate" by A. C. Callister; "Pituitary Tumor" by W. R. Tyndale and D. W. Henderson; "Abdominal Pregnancy" by O. J. LaBarge.

The following applicants were unanimously elected members of the society: Drs. R. J. Johnson, S. Netolisky, and L. E. Wight.

BARNET E. BONAR, *Secretary.*

UTAH COUNTY

The regular bimonthly meeting of the Utah County Medical Society was held the evening of March 25 at the Hotel Roberts, in Provo.

Dr. F. W. Taylor spoke on "Treatment of Epilepsy."

This was one of the most interesting meetings the society has had in a long time. The paper was very well prepared and excited much favorable comment and interest.

It was followed by a discussion of medical economics by the attending members.

On April 1, the Utah County Medical Society gave a farewell banquet to Dr. J. W. Aird and his son J. L. Aird, who are leaving for California where they will continue their professional work.

Dr. J. L. Aird has served as our secretary for the past two years, and has taken a very active part in society work.

Dr. J. W. Aird has been for many years one of the outstanding surgeons in our state, and has occupied the president's chair of the society and the Utah State Medical Association. His many friends throughout the state and members of other component societies were invited on the night of the banquet to bid him godspeed.

On the evening of Monday, March 9, the Utah County Medical Society were the guests of the Utah County Dental Society at the Hotel Roberts, Provo.

H. G. Merrill, M. D., spoke on "Eye Facts All Should Know."

CHARLES M. SMITH, *Secretary.*

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WEBER COUNTY

The regular meeting of the Weber County Medical Society was held March 19 at the Hotel Bigelow. A banquet preceded the meeting. President E. P. Mills presided.

Dr. Foster Curtis then gave a very interesting paper on "Diagnosis of Mental Diseases."

CONRAD H. JENSEN, *Secretary.*

OBITUARY

Ira A. E Lyons
1849-1931

Dr. Ira A. E. Lyons, eighty-two, of 801 East South Temple Street, died at 1 p. m. Wednesday in a local hospital of a cerebral hemorrhage.

Doctor Lyons was one of the first eye, ear, nose, and throat specialists to practice in Salt Lake, coming here about fifty years ago. He was retired at the time of his death, but was a member of the Salt Lake County Medical Association.

He was active in the First Presbyterian Church, being a former elder.

Surviving are two daughters, Miss Millicent Lyons, a teacher at Granite high school, and Mrs. Grace Newlee of Los Angeles. His wife, Rachel Miller Lyons, died last November.

X-Raying Mummies and Old Masters.—"Death by violence, probably," said the expert as he examined the x-ray film of a boy's head that he had just developed. "The skull is fractured, the jaw bone is broken, and a tooth has apparently been knocked out. The injuries indicate that the cause of death was a blow from some such weapon as a club, and they are quite different from those that would be brought about by a fall or other common accident.

"However, nothing can be done about it, for the crime—if it really was a crime—was committed over three thousand years ago, and neither evidence nor criminal could now be produced in court. We can only trust that Egyptian justice was effective and that the little fellow did not die unavenged."

This curious case was brought to light by Harold G. Petsing, educational director of the Westinghouse X-Ray Company, during the course of a series of x-ray investigations which he has been carrying out on mummies at the Brooklyn (New York) Museum.

"This work, which has been undertaken at the behest of Edward S. Blum, president of the board of trustees of the museum, and which is under the direction of Dr. William H. Fox, director of the museum, emphasizes the scientific importance of the x-ray examination of mummies, which discloses their contents without damaging them in any way, said Mr. Petsing. "Each of the first three mummies I x-rayed showed something of interest."

Mummies are by no means the only objects collected by museums that should be subjected to x-rays, according to Mr. Petsing. Of special importance is the newly developed art of studying old paintings by x-ray methods. Considerable work in this field has been done both in Europe and in this country, but a standardized technique has not yet been worked out, and it is one of Mr. Petsing's objects to secure scientific data to guide future investigators.

The old masters used pigments that were for the most part made up of mineral and metallic colors. These pigments are quite opaque to x-rays, so that a radiograph taken with moderate power is almost a complete replica of the original painting. every detail and every brush mark being clearly distinguishable. Modern pigments, on the other hand, are largely of vegetable and coal-tar origin, and these are very transparent to the penetrating rays. Hence, a radiograph of a modern painting taken with moderate power shows practically nothing. This fact provides an excellent method of detecting modern forgeries of old masters.

The same method does not, of course, apply to early copies of old pictures, because in such cases the copyists used opaque pigments also, but other methods are used to distinguish originals from replicas. In the first place, every painter has an individual method of using his brush, and the brush marks that are shown in x-ray pictures are as characteristic as fingerprints. The expert, therefore, is frequently able to tell the genuine from the false by studying these marks. Furthermore, in making an original painting, the artist usually makes a number of changes in detail as the work progresses, all of which, though painted over and invisible to the eye, are clearly seen in the radiograph. Copies, on the other hand, rarely show such changes.

Sometimes the x-ray shows that a later artist has changed an early painting, either deliberately, or in an attempt at restoration, and sometimes it reveals an entirely different picture lying concealed beneath the one visible on the surface. In such cases, it may often pay to remove the later work and restore the original to its primitive conditions.

X-rays are also useful for studying embedded fossils, and for revealing the structure of rare specimens of fish, birds, reptiles, small mammals, and even insects. They can, in many cases, show the difference between genuine medieval works of art and modern forgeries. Turned upon ancient caskets, cabinets, and writing desks, they may uncover unsuspected secrets.

These are but a few of the possible applications of x-rays in a modern museum, and it seems probable that every museum of importance will, in the near future, regard x-ray apparatus as a necessary part of its standard equipment.—*Westinghouse Technical Press Service.*

MISCELLANY

Items for the News column must be furnished by the twentieth of the preceding month. Under this department are grouped: News; Medical Economics; Correspondence; Department of Public Health; California Board of Medical Examiners; and Twenty-five Years Ago. For Book Reviews, see index on the front cover, under Miscellany.

NEWS

University of California Medical School.—The University of California Medical School will offer summer courses for graduates in medicine from June 8 to 20, 1931.

Several clinical branches will be given in the morning and afternoon courses, including the following subjects: general medicine, general surgery, otorhinolaryngology, genito-urinary diseases, tumors, roentgenology, pediatrics, circulatory diseases, laboratory dianosis, pathology, neuro-otology, and operative technique.

In addition to the regular courses, there will be combined rounds of the departments of medicine and surgery at nine on Wednesday mornings and daily noon lectures and clinico-pathological conferences. The rounds and lectures will be held in Toland Hall, University Hospital, and the clinico-pathological conferences in Cole Hall, Medical School building. The rounds, lectures, and conferences will be open to the medical public without charge.

A detailed announcement of courses will be ready about May 1, 1931, and will be mailed on request to the dean's office, University of California Medical School, Parnassus and Third avenues, San Francisco.

The Board of Trustees of Stanford University has received and accepted an offer from an unknown donor to contribute $2,500,000 toward the erection of a medical school building on the condition that the university arrange to endow the same with not less than $1,250,000. The university must raise this sum on or before February 1, 1932.

Radio Broadcast by San Francisco Heart Clinic.—On Monday, March 9, 1931, the San Francisco Heart Committee of the San Francisco County Medical Society, whose chairman is Dr. Eugene S. Kilgore, gave the first of a series of radio broadcasts on the prevention and relief of heart disease. The broadcast is being given every week as follows:

KFRC, Monday, 3:45 to 4:00 p. m.

KJBS, Tuesday, 11:15 to 11:30 a. m.

The talks are written by physicians and are an attempt to give to the public, in an ethical way, honest information on medical facts concerning heart disease, which is the leading cause of death. The program is arranged by the Section on Education and Publicity, of which Dr. John Philip Strickler is chairman.

Southern California School of Medicine Announces Extension of Program.—The school of medicine, University of Southern California, will offer the work of the third year, beginning clinical work, with the opening of the fall term in September 1931, according to announcement of Dr. Paul S. McKibben, chairman of the medical faculty at Southern California.

This step in the development of the medical school at Southern California was revealed at a recent meeting of the Medical Advisory Committee, of which Dr. W. W. Becket of the board of trustees of the university is chairman. Other members of the committee are: Dr. Wayland Morrison, Dr. Seeley G. Mudd, Dr. Ernest A. Bryant, Dr. Granville MacGowan, and Dr. Edward M. Pallette, all of Los Angeles; and Dr. George Dock of Pasadena.

The School of Medicine of Southern California was opened for the instruction of students in September 1928, and during the academic year 1928-29 only the work of the first year was offered. In 1929-30 the work of the second year added. The opening of the academic year 1931-32 in September will mark the extension of the school's program to include the third year.

California Conference of Social Work.—The twenty-third annual meeting of the California Conference of Social Work will be held in Berkeley, May 17 to 21. The program theme is "Economic Justice and Social Progress." Sections on family and child welfare, public health, use of leisure time, organization and administration, delinquency, industry, education, and racial and citizenship problems will meet each morning from 9 to 12:45 o'clock; luncheon meetings will be held at one o'clock; during the afternoons the twenty-four hundred groups affiliated with the Conference will hold their meetings; and in the evenings the entire conference body will come together in general session.

Conference activities will be centered in International House and many of the delegates will be housed there, as there are living accommodations for 200 women and 100 men. Conference sessions will be held at Wheeler Hall on the University of California campus, at the College Women's Club, Hearst Gymnasium, and International House.

Many new names will appear on the Conference program and interesting experiments in types of meetings will be tried. Conference sessions are open to everybody interested in social welfare.

For copy of the program and other information regarding the conference, write to the executive secretary, Miss Anita Eldridge, 20 Second Street, San Francisco.

The International Society for Crippled Children, Inc.—The second world conference of workers for crippled children will be held at The Hague the week of June 28, 1931.

This meeting is an outgrowth of the Geneva conference held two years ago, which was so eminently successful.

MUCH IN LITTLE

YOU SHOULD KNOW THAT

Little children think all pills are candy.

Lye has blinded the eyes of children who handle it.

Toys may have loose parts which children swallow.

Flies and mice will not go where they cannot get food.

A running engine quickly fills a closed garage with deadly gas.

The vaccination school law has made it impossible for Pennsylvania to have much smallpox.

An express train is apt to approach a crossing the same time as does an automobile.

Cities using filtered and chlorinated water have lower death rates than others.

Airship rides will not cure deafness, nor will patent medicines cure tuberculosis.

Medical advice given by lay or uneducated people is worth what it costs—nothing.

Measles kills many babies, and whooping cough is more deadly than scarlet fever.

A child must have good vision, normally so or corrected by glasses, in order to get through school successfully.

Industrial accidents are decreasing because people are becoming more careful in handling machinery.

Poisons kept on the medicine shelf may be taken accidentally at night.

Knowing how to swim frequently keeps people from drowning, but overconfidence in expert swimmers may lead to their doom.

Children watch their parents in all their acts. They mimic carelessness as much as precaution.

If you have read this and adopt the necessary precautions, the lives of your children and yourselves will be better safeguarded.—H. B. W., in *Pennsylvania Health*, October 1930.

TWENTY-FIVE YEARS AGO*

EXCERPTS FROM OUR STATE MEDICAL JOURNAL

Vol. IV, No. 5, May 1906

[EDITOR'S NOTE.—*On April 18, 1906, the great San Francisco catastrophe took place. In the great fire which devastated the city the office of the California State Journal of Medicine, the official publication of the Medical Society of the State of California, was burned to the ground. The May issue of the California State Journal of Medicine became a simple four-page leaflet without a single advertisement, which was gotten out under great stress and strain at a printing office at Oakland, by the late Dr. Philip Mills Jones, founder of the state journal and the then editor. The excerpts which appear in this month's Twenty-Five Years Ago column are taken from this little four-page leaflet.*]

From some editorial notes:

A Sad Greeting.—It was a very different sort of May issue we had planned. But, as all the world now knows, our beautiful city of San Francisco has been almost wiped out of existence. The editor has been able to confer with but one member of the Publication Committee and a few of the delegates living in Oakland, and these have authorized the bringing out of this number in its present form. There is not a business house of any sort left standing in San Francisco—no paper house and no printer—so this number is printed in Oakland. The mailing list of the JOURNAL has also vanished, so that many exchanges and subscribers will not at once receive this issue. However, enough copies will be printed to supply all regular recipients in the course of time. We would respectfully request other journals to copy this statement and also say that no sample copies will be sent out. The present address of the JOURNAL, or rather of the editor (for the JOURNAL office is beneath the editorial hat, which was almost his only possession not detroyed), is 1230 Telegraph Avenue, care of Dr. Frank Adams, Oakland, California. Correspondents are respectfully warned, however, that their letters may not be answered immediately, for almost all typewriters have been destroyed and the whereabouts of our stenographer is an unknown quantity.

* * *

Future Issues.—We desire to get out this May issue in its sadly abbreviated shape in order to let all whom it may concern know that while we are now sitting on the ashes of our former property and have nothing but a pencil, a piece of paper, and some credit, the spirit of the physicians of California is in no wise daunted. When the JOURNAL was born, we were told that it could not live; but it throve and waxed lusty. Shall we allow the "devil on two sticks" to do what human scheming could not do—stop us? Hardly! As there will be a newer and a better and more beautiful San Francisco, so there will rise, Phoenix-like, we trust, a better and more useful *California State Journal of Medicine.* But we must needs ask your patience, for our troubles are mighty, and while they do not crush us, they weigh heavily. The June number will not be issued until it can come out in regular size and garb.

* * *

To Our Advertisers.—All the world has extended its sympathy and its aid to stricken California, and never has general human sympathy been more gratefully received. Now is the time for our out-of-California advertisers to aid our society and its JOURNAL. We shall need every penny we can secure in the rebuilding of our JOURNAL and we ask you, gentlemen all, not to take cognizance of the fact that no advertising pages appear in this issue, but to allow us to charge you with the regular charge for your monthly advertising space. Your courtesy in so doing will be highly appreciated and we will endeavor in future issues to acknowledge your courtesy and your contribution to the relief of California, its State Medical Society, and its *State Journal of Medicine.* If this is your pleasure, please so advise the editor.

* * *

Semicentennial Meeting.—Undoubtedly the annual meeting of the Medical Society of the State of California for 1906—its semicentennial—will remain forever the one most generally remembered. The registration book unfortunately is not at hand—one can only say that it once existed—but it is known that about 4 p. m. on Tuesday, April 17, the first day of the session, nearly three hundred members had registered. The program was unusually good; at least one copy is known to exist, and there may be others. . . .

Everything promised an unusually harmonious and profitable meeting. Unfortunately our plans were not well adapted to those of the remainder of the universe. At 5:14:48 on the morning of the 18th, the city was wrecked by an earthquake which lasted but forty-eight seconds. This, to those in other places, is now but ancient history, but to those of us who went through that and all the following days of horror, it will never become ancient. Fire broke out in unnumbered places immediately after the shock, and as nearly all the water supply mains had been broken, what the shock began the fire completed.

Shortly after 9:30 a. m. on Wednesday, the president, Dr. R. F. Rooney, the secretary, Dr. Philip Mills Jones, and Drs. James H. Parkinson and H. Bert. Ellis gathered on the steps of the wrecked Y. M. C. A. building and declared the society adjourn *sine die.* The secretary made three trips to the Association office, on the third floor, and saved the account books, minutes of the Council and minutes of the House of Delegates, together with some miscellaneous papers hastily gathered together. All advertising contracts, current vouchers, etc., are in a safe deposit vault, perfectly intact. When or where the next meeting of the society will be held, no one

*This column strives to mirror the work and aims of colleagues who bore the brunt of state society work some twenty-five years ago. It is hoped that such presentation will be of interest to both old and recent members.

knows; probably a meeting of the delegates will be called in due time. Even the whereabouts of the president, Doctor Rooney, are unknown to the secretary.

Some buildings were burned fiercely within fifteen minutes after the shock, and within twelve hours one-half the city was a solid mass of fire. So fast did it spread that the fire raged as fiercely, seemingly, for blocks behind the fire line as it did immediately in the zone of devastation. In places it spread so fast that those escaping were caught and had to abandon the few effects they were endeavoring to remove. In the streets on the hills which were considered safe, whole trainloads of personal effects and household goods were burned. . . .

* * *

Our Policy.—For nearly three years there has been no issue of the JOURNAL which did not contain some reference to the nostrum evil, and we cannot allow this sadly abbreviated issue to go to press without comment on that nasty business. Presumably there were many participators in the nostrum business who rejoiced to think that we were wiped out. If so, their joy will be but short-lived, for our policy will be unchanged. We expect to keep on fighting the nostrum graft and its detail nuisances just so long as we exist, or at any rate during the lifetime and control of the present editor and publication committee. . . .

DEPARTMENT OF PUBLIC HEALTH

By GILES S. PORTER, M. D., *Director*

Septic Sore Throat Is Now Reportable.—At its regular meeting held in San Francisco, March 14, 1931, the California State Board of Public Health passed the following resolution:

Resolved, That *septic sore throat* is hereby declared a reportable disease in California.

Fleas May Transmit Endemic Typhus Fever.—The United States Public Health Service reports that there is strong evidence to indicate that, in this country, fleas may be the means of transmission of typhus fever from person to person or from a possible rodent reservoir to human beings. It has been known for many years that the old-world type of typhus fever is transmitted by the body louse. Study of a milder type of this disease which is found in the United States indicates that the body louse may not be involved in the transmission of the type of disease that is found in this country. The result of this study is of considerable epidemiological importance to public health authorities in California and in other states as well.

Sewage Disposal at the Summer Home.—Each year, more city people drift to the country for the summer season. Many of them have purchased or built summer homes and there is an increased demand for information relative to methods of sewage disposal at such places. A bulletin entitled "Rural Sanitation," prepared by C. G. Gillespie, chief of the Bureau of Sanitary Engineering, supplies practical information upon this subject.

A Triumph in Diphtheria Control.—The record of New York City in the control of diphtheria in 1930 marks the peak of performance in the control of this disease. The following extract is reprinted from the *Weekly Bulletin of the City of New York Department of Health* for February 7.

During the year 1930 there were 3794 cases of diphtheria reported to the department of health, of which 2882 occurred in children under 10 years of age, 350 in children 10 to 15, and 562 in persons 15 years and over. Investigation of the 3794 cases showed that 3530 children had never received injections of toxin-antitoxin, 75 children had received such injections less than six months previously, and 189 had received the injections more than six months before the illness. It has never been maintained that a course of three injections of toxin-antitoxin will completely immunize 100 per cent of the children so treated. Park's studies indicate that approximately 80 per cent will be protected by one course of treatment and that the great majority of the 20 per cent left unprotected can be immunized with a second course of toxin-antitoxin injections. Under the circumstances, the above showing is excellent.

Still more striking is the showing of toxin-antitoxin immunization in the fatal cases of diphtheria. Our records show 198 deaths from diphtheria in the city during 1930. Only four of the patients had previously received toxin-antitoxin, and in two of these four the immunizing injections had been given only within the month in which the disease occurred and so could not be effective.

A tabulation of the 198 fatal cases shows that 162 of the patients were treated with antitoxin, but here again a detailed study of the individual cases brings out some interesting facts. It must be remembered that, valuable as antitoxin is in the treatment of diphtheria, it is not an infallible remedy. The results depend on the promptness with which the antitoxin is administered and on the size of the dose. In severe cases the method of administration is also a factor. These well established facts are well brought out by our study of the 198 fatal cases in 1930. The antitoxin history of these cases was as follows:

Antitoxin before the third day of disease	58
Antitoxin on third or later days	104
Received no antitoxin	18
Antitoxin data unobtainable	18

In New York State, exclusive of New York City, similar results have been achieved. The number of diphtheria deaths in New York State decreased from 337 in 1925 to 144 in 1930, and the number of cases decreased from 4370 to 1594. The diphtheria death rate for the state has decreased from an average of 10.1 per 100,000 population for the period 1921-1925 to 3.8 for the years 1926-1930, during which period approximately three-fourths of a million children were immunized against diphtheria with toxin and antitoxin. Of this number, more than 185,000 were under five years of age.

Deaths From Alcoholism Increase.—Deaths from alcoholism in California, last year, increased by 14 per cent. There were 230 deaths from this cause in 1930 and 202 such deaths in 1929. During the past ten years there has been an increase each year in the number of deaths from alcoholism in California. A corresponding increase is noted also in the number of deaths from cirrhosis of the liver. While there is no definite evidence available to show that all deaths from cirrhosis of the liver are due to the use of alcohol in excessive amounts, the proportion of such deaths is so great among those who use alcohol excessively that it constitutes ample justification for grouping these causes of death together. The United States Bureau of the Census for many years has grouped together mortality statistics for alcoholism and cirrhosis of the liver. There were 631 deaths from cirrhosis of the liver in California in 1930 as compared with 566 such deaths in 1929. This represents an increase of more than 10 per cent.

The following table shows the number of deaths in California that have occurred from alcoholism and cirrhosis of the liver, by years, since 1920:

Year	Alcoholism	Cirrhosis of the Liver
1920	37	286
1921	69	314
1922	110	358
1923	125	345
1924	161	401
1925	146	389
1926	167	418
1927	190	501
1928	197	556
1929	202	566
1930	230	631

CALIFORNIA BOARD OF MEDICAL EXAMINERS

By CHARLES B. PINKHAM, M. D.
Secretary of the Board

Results of Los Angeles Examination
February 3 to 5, 1931

PASSED

School	Year of Graduation	Per Cent
College of Medical Evangelists	(1930)	89 4/9, 86 7/9, 86 7/9
Creighton University	(1930)	83 4/9, 75
Hahnemann Medical College of Philadelphia	(1930)	83 2/9
Harvard	(1929)	84 8/9
Harvard	(1930)	84 7/9
Imperial University of Tomsk, Russia	(1911)	84 6/9
Jefferson Medical College	(1929)	83 2/9
Jefferson Medical College	(1930)	83 3/9
Johns Hopkins	(1919)	77
Johns Hopkins	(1930)	87 2/9
McGill University	(1930)	88 7/9, 85 3/9
Northwestern University	(1930)	87 6/9, 87 85 4/9, 85, 84 7/9, 84 3/9, 83 7/9, 82 1/9, 78 1/9
Queens University, Canada	(1921)	77 4/9
Royal College of Physicians and Surgeons, England	(1921)	85 1/9
Rush	(1921)	84 8/9
Rush	(1930)	89, 88 2/9, 85 1/9, 82 7/9
St. Louis University, Missouri	(1930)	91 4/9, 88 3/9, 83, 82 8/9, 82 8/9, 77, 75 1/9
State University of Iowa	(1928)	79 5/9
Syracuse University	(1930)	87 5/9
Tulane University	(1930)	86 1/9
University of Colorado	(1930)	86 5/9, 86 4/9, 82 1/9
University of Edinburgh, Scotland	(1930)	79 6/9
University of Guadalajara, Mexico	(1921)	77 8/9
University of Glasgow, Scotland	(1930)	76 4/9
University of Illinois	(1927)	77 6/9
University of Illinois	(1928)	84 2/9
University of Kiel, Germany	(1921)	80
University of Louisville, Ky.	(1929)	86 6/9
University of Michigan	(1927)	87 4/9
University of Michgan	(1930)	88 1/9
Unversity of Mnnesota	(1930)	84 7/9, 84 3/9
University of Nebraska	(1928)	81
University of Oregon	(1929)	84
Univrsity of Oregon	(1930)	89 5/9, 88 3/9, 85 2/9
University of Pennsylvania	(1928)	86 2/9
University of Pennsylvania	(1929)	77 4/9
University of Pennsylvania	(1930)	87
University of Toronto, Canada	(1930)	82 8/9

FAILED

College of Medical Evangelists	(1930)	71 1/9
Emory University	(1925)	64 5/9
Laval University, Canada	(1912)	66 6/9
Royal University of Naples, Italy	(1916)	63 8/9
Trinity University, Canada	(1904)	65 3/9

News Items, May 1931

It is reported that on March 3, 1931, Attorney-General Webb rendered Opinion No. 7425 in interpretation of Section 1 of "An Act to regulate the sale, possession, distribution and use of habit-forming, narcotic and other dangerous drugs and substances, and providing penalties for the violation thereof." That "The Act in question requires that the prescribing physician in his own handwriting affix the date of the prescription, designate the drug and the manner of its use, the name of the person for whom the same is prescribed and his address . . . and that the prescription shall be signed and dated as of the date on which said prescription is written by the physician." This opinion is of sufficient importance to be presented to the medical profession for their guidance.*

"Appointment of J. M. Scanland of San Francisco as assistant to Medical Superintendent J. H. Stice of the Napa State Hospital was announced here by Dr. J. W. Toner, the State Director of Institutions. Dr. Scanland was the medical superintendent of the Napa institution sixteen years ago. He had been in charge of the Montana State Hospital at Warm Springs, Montana" (Sacramento *Bee*, March 13, 1931).

H. G. Campsie, according to reports, pleaded guilty in Los Angeles, March 23, 1931, to a charge of violation of the Medical Practice Act and was sentenced to pay a fine of $500 or serve fifty days in the city jail, sentence suspended for six months.

Charles H. Collier on March 27, 1931, in the Justice Court of Alhambra pleaded guilty to a violation of the Medical Practice Act and was sentenced to pay a fine of $100.

The following is a digest of a report filed by Special Agent Davidson: "The Police Department yesterday (March 25, 1931) arrested the above mentioned individual (George Malcolm Condon) for petty theft, growing out of the theft of medical books and surgical instruments while working as an orderly at the San Francisco Hospital, and he was this morning in the court of Police Judge Steiger sentenced to serve ninety days in the county jail. At the time of his arrest a number of cards were found in his possession, reading 'Dr. George M. Condon.' We interviewed him today in the city prison and he informed us he has never attempted to attend any medical or premedical school. He is about twenty-one years of age and a native of Massachusetts. . . . "

"Dr. Edgar E. Ewing, Huntington Beach physician, Tuesday pleaded guilty in the Justice Court of Huntington Beach to a violation of the State Poison Act in prescribing narcotics to an addict. Judge Chris Pann sentenced him to serve 150 days in the county jail and pay a fine of $150. He then suspended the jail sentence and all but $75 of the fine, which was paid" (Santa Ana *Bulletin*, March 27, 1931).

Reports of eyesight swindlers continue, the latest, according to a clipping from the San Francisco *Chronicle* of March 9, 1931, being D. B. Curry, farmer in the Pleasant Grove district, who was victimized out of $600 by two men representing themselves as optical experts, who "administered drops of some kind of fluid to the eyes of Curry in 'testing' his eyes."

"Dr. George Gillespie, chiropractor and drugless physician, was held to answer on a charge of murder yesterday by Municipal Judge Theresa Meikle. Gillespie was arrested last Tuesday, following the death of Beatrice Fern Fisher, 355 Fulton Street. Police claim she died of an illegal operation performed by Doctor Gillespie" (San Francisco *Examiner*, April 1, 1931).

"Emma Horton, 74-year-old physician, was arrested today for suspicion of murder in the case of Miss Aletha Elkins, twenty-three, who died yesterday as the result of an alleged illegal operation." (Press dispatch from Los Angeles printed in the San Francisco *Examiner*, April 14, 1931.)

"The charges against Dr. Ralph Newcomb, Upper Lake physician, for the alleged use of narcotics, were dismissed by Judge Benjamin C. Jones in Superior Court Friday for lack of sufficient evidence. The physician's wife, Mrs. Silvia Newcomb, had sworn to the narcotic complaint the week before. . . . When the case was called Friday, Mrs. Newcomb was present and told the court that she did not wish to press the charges she had previously made against the doctor and the case was subsequently dismissed. Doctor Newcomb, who is about forty years old, had his license to practice medicine revoked by the State Board some time ago for alleged drug addiction and about a year ago he was granted permission to resume practice . . ." (Lake County *Bee*, March 18, 1931).

* See, also, editorial comment in this issue of California and Western Medicine on this item concerning California narcotic laws.—G. H. K.